AMERICAN BEE JOURNAL

NOVEMBER, 1921

QUEEN MATING YARD OF GAETANO PIANA, OF BOLOGNA, ITALY

CONTENTS OF THIS NUMBER

AMERICAN BEE JOURNAL

VOL. LXI—NO. 11 HAMILTON, ILL., NOVEMBER, 1921 MONTHLY, $1.50 A YEAR

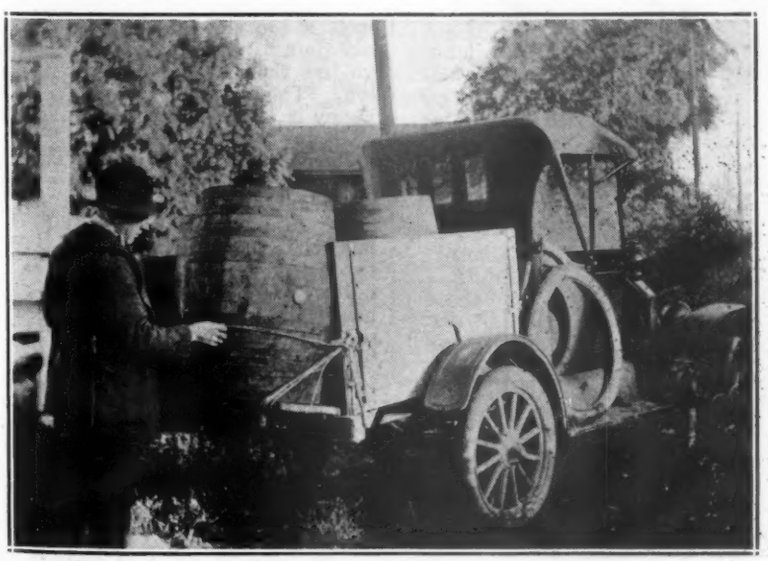
CARE OF HONEY FROM EXTRACTOR TO MARKET

Ripening, Straining, Liquefying, Packing, Etc.

—By C. P. Dadant

The beekeeper who harvests honey in sufficient quantities to put it up in barrels is quite a producer. Usually, when he has gone that far, he has devised his own methods. He perhaps has a central plant in which he does all his extracting and keeps large tanks and a number of implements which would be too expensive for the average producer. This article is intended to give the best methods that we know of for the producer who is not organized on a large scale, but who may have one or more outapiaries and tries to retail at least a part of his honey.

But why put up the honey in barrels at all? Well, there are several good reasons. If you use good barrels, sound, dry, not charred inside, well bound, with iron hoops, it is at least as safe to put up and haul the honey in that way from your outapiaries as in tin containers. We use second-hand alcohol barrels, which have been gummed inside so that there has been no loss of alcohol, and such barrels, if well cared for, need never lose a drop of honey. We have used the same ones over and over, for years. They are more easily hauled around than cans, there is less danger with them from ants and other insects than with tanks, and if you must keep the honey from one year to another, in order to get the price that you want, it will keep better in one of those barrels than in tanks or cans. We kept honey as long as 5 years, after a record crop, rather than throw it upon the market at a low price and finally came to a short crop, when we were glad to have it for sale. It is easier to take the granulated honey out of a barrel than out of a metal tank, unless your tank is so placed as to be heated artificially to liquefy the honey. By carefully marking the head of the barrel so as to replace it in the same position exactly, using a gimlet in the center of the head to pull it out, loosening the hoops only as much as necessary, using a new, clean spade to take out the honey, we can replace the head and tighten up the hoops again after removing the honey, leaving the barrel just as good as before. It is true that we remember having bought some "honey kegs" from a dealer in Chicago, years ago, and found that those kegs would not even hold water, much less honey. Yet, even such kegs, if thoroughly dry, could be made to hold honey, by heating them and dousing the inside with a mixture of hot wax and grease. The grease must be sweet and odorless and only enough should be used to make the wax soft. This mixture enters the pores of the wood and cools there.



Loading barrels to be filled at the outyard

But here comes an objection: How am I to handle barrels full of honey if I do my work alone? This is an argument which we cannot overlook. Yet, I have filled barrels with honey, loaded them on the wagon and unloaded them, without help, by the use of long skids, and when I could not get skids, I used a long ladder, supported at intervals to bear the weight of the barrel. Then I used the declivities in the yard, placing the wagon at the lower side. We used to say that a man was not a "man" unless he could up-end a barrel full of honey. If you do not wish to do heavy lifting and you are alone, you

will have to discard the case of two 60-pound cans, for such a case weighs 135 pounds and has to be lifted or slid along on skids, also. There is considerable heavy lifting about a crop of two or three tons of honey.

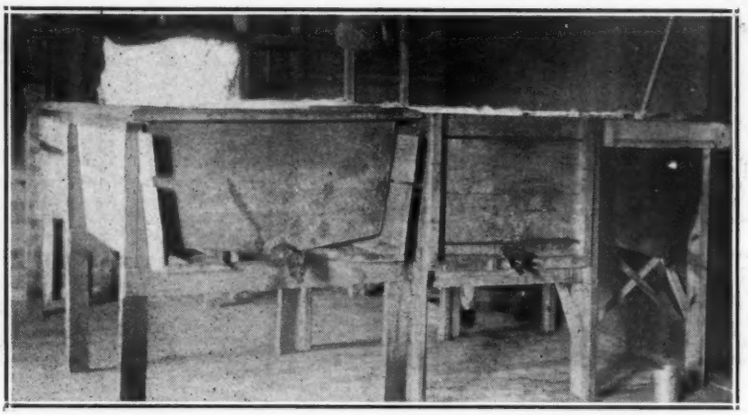
The objection we have to the use of 60-pound cans is that we want to put up our honey in small receptacles as the orders come. So we would need to empty those 60-pound cans of the honey put in them. The average honey producer knows that a 60-pound can which has been filled and emptied is only a second-hand package afterwards, for it is difficult to rinse it and have it again perfectly dry. That is why we prefer the barrel, which is just as good, after having been filled and emptied several times, if we care for it properly. We must never put water in it, or if we do, just to wash out the small particles of honey, we should drain it at once and keep it in a dry place, and tighten the hoops before using it again.

Ripening

But let us come to the first question of this article: ripening honey.

It is unnecessary to advise the beekeeper not to extract his honey until it is as fully ripened as the bees can give it. But, unfortunately, even capped honey is not always fully ripe. If your honey is not ripe and you do not have tanks in a warm, dry building, in which you may leave it during the hot weather, you will need to ripen it artificially. This may be done at the time of putting it up in small packages, if it is not so green as to ferment before that time.

How am I to know that my honey is ripe? Ha! This is a hard question. You will have to trust your judgment. Much depends upon the heat of the day in looking at the flow of the honey. But if you leave it long enough on the hives, there will be very little chance of having it too green. I do not remember getting unripe honey more than two or three times, and I soon found it out. If you have a gallon measure and an exact scale, you may weigh it. Or you may use a hydrometer. . I never did.



Shallow settling tanks used by R. V. Cox, a New York beekeeper

If you are not provided with large heating tanks, you may liquefy or evaporate honey by using a few large pails in a wash boiler on the stove, or in some flat boiler, which may contain several deep pails. Place a couple of slats of wood under each pail so that it will not rest flat on the bottom of the boiler. Fill your pails to convenient depth with honey. Place them in the boiler. Then put enough water in the boiler to reach up about two-thirds the height of the pails. If you do not have a special stove, and must use the kitchen stove, you should leave enough room at the front for the housekeepers' service, or you may hear from her.

The water in your melting boiler must not come to a boil. After a little while, the honey in the pails will begin to melt along the edges. Stir it and it will melt more quickly, for the center of the mass would be slow to heat. You need not get it all melted before taking it off. A little experience will indicate to you when it is melted enough to finish melting from its own heat, off the stove. Heating things over water in this way is what cooks call "bain-marie."

Have some sort of a tank ready, high enough from the floor so that you may put a scale and any of your retail receptacles under the faucet. An extractor can is very convenient, if you are through with the extracting. Usually the retail receptacles are filled to the brim, so that they do not need to be weighed, but it is best to have a scale so that you may be able to weigh any quantity, small or large.

One thing you must remember: The quicker you melt the honey and cool it, the less color it will gain and the less flavor it will lose. If you heat it too hot, you will evaporate all those fine essential oils which gave it the flavor of the blossoms and distinguish honey from molasses, and even maple syrup. But whenever you heat it, if it is ever so little, it will give off steam and become thicker. It will, of course, lose in weight. Better melt it too slowly than take risks of overdoing it. Good honey should not go less than 11¾ pounds to the gallon. The regular weight of ripe honey is 12 pounds to the gallon.

Honey that has been heated will usually not granulate again. The riper honey is, as a rule, the less readily it will granulate. This statement was first made to me at a beekeepers' meeting, in 1885, at Syracuse, New York, by our old friend L. C. Root, the son-in-law of Moses Quinby. When I heard this assertion, I shrugged my shoulders in irony. But I learned afterwards that he was right. However, some grades of ripe honey granulate very readily. I will mention alfalfa and heather. The latter, we are told, is usually so thick when harvested by the bees that it cannot be thrown out by centrifugal force. I never had a chance to test this myself.

Strainer in place for filling barrel

Straining

The heading of this article says something about straining honey. I

was about to forget it. The first extractors made were supplied with a strainer just above the faucet or honey gate. In less than half a day of practice we had to take this out, for it clogged. We use a large strainer over the barrel or receptacle in which the honey is to rest. This is made of a flour sieve with a broad rim to enable it to take a good amount of honey. If you use a tank and a pipe to run the honey to it, you must have this sieve above it. Only small particles of wax which have passed through the sieve fall into the honey, and will float on top. If you expect to keep the honey in barrels until after granulation, you should set the barrel "on end" in the honey room. The wax will come to the top and you can readily scrape it off after taking out the head. If you draw out the honey while liquid, there will be wax in the last gallon or so that you draw out. The same may be said of a closed tank. This is put into a small receptacle and skimmed off after the honey settles. We can keep on drawing the honey off until there is only a gallon or so of skimmings from several barrels. If it is your own honey and you know it is free from germs, you may feed it to some needy swarm. If you are not acquainted with it because you have bought the honey from some stranger, better make this stuff into vinegar. No need of losing anything. By heating it above 145 degrees you will melt the wax and it will cake over the surface.

By following the method which I have just mentioned you will have your honey, in liquid form, in the very best shape to put it up into all sorts of small receptacles, from the "individual package," of an ounce or less, to the 10-pound pails. It will always be clean and thick. It will keep the flavor of the blossoms. You may "blend" it, if you have two or three different crops. To do this you must heat it. This is sometimes advisable. But if you sell to the consumer or to the small retailer who know you, it is as well to supply the special bloom which they will learn to know: white clover, sweet clover, raspberry, basswood (by the way, basswood may give its flavor to a large amount of honey), persicarias, Spanish needles or bur marigold, several kinds, or if you live in the West or the South, you may have cotton honey, catclaw, sage, orange, etc.

By this time, if the large producer has followed me, he will have noticed that I am writing for the man who has none of the expensive conveniences of the big establishment. The man who has a two-story honey house, with a four-ton tank in which to pour the honey and which he can heat at will, has no need of instructions. As I have already stated, he has his methods.

One little hint: If you have leaky cans (sometimes a can will have an imperceptible hole which would not leak water but from which honey will ooze), do not trouble yourself with emptying the can to repair it. Just have a little handful of beeswax or paraffine melted with a little tallow, about half and half. Then rub a little of this over the leak. The can will be repaired, in this way, until it is washed with boiling water. I have often repaired even large tanks with this material, and I remember when a plumber could not stop leakage in a lead water tank of 25 barrels in my attic, and I came to the rescue with a little of this tallow wax. We did not know exactly where the leak was, but the wax found it when we rubbed it over the surface. The plumber said that was a good way to humbug the customer. It was a **good** way, sure.

This was my own discovery after emptying hundreds of leaky cans, to solder the holes, sometimes making it worse than before. If the tenderfoot has ever tried the soldering iron, he knows some of the tribulations of the apprentice tinner.

May I say a word in favor of selling as much of granulated honey as possible? I know that most beekeepers avoid the task of explaining that granulated honey is absolutely pure and that, with only a few local exceptions, consumers imagine that granulated honey is adulterated. But it is not so very difficult to convince them, if we go at it right, and it helps the sale of honey greatly. We have a trade in granulated honey and many people learned to prefer it to liquid honey. Why not?

If the beekeepers wish to increase the sale of honey, they must make an effort to convince the public of the best way to recognize its purity. They must also instruct the customers on the methods by which honey is extracted. Some people have so little idea of its manipulation that they call extracted honey "extract of honey," giving the impression that the honey in that shape is not pure bees' honey.

I will never forget my disappointment, when I made my first attempt at selling extracted honey, clover honey, to a druggist, in 1869, just after the invention of the honey extractor. At that time druggists were the only people who handled honey in the Central West, and they were accustomed to the "strained honey" taken by either killing the bees or driving them out and crushing the combs to **strain** the honey out of the pollen, brood, etc. My honey, the first that we had ever extracted, was clear, light-colored; well, you know how white clover honey looks. I came to the druggist with all the confidence of an 18-year-old boy who has something of excellent quality for sale, a brand new product. The druggist took up a sample of that honey, looked at it, then with a frown he said: "We don't buy sugar syrup. We know how to make it when we want it." I tried to explain, but he would not even listen. That man bought extracted honey from me later, granulated honey, after he found out that there was indeed a new way to take honey from the bees. But it was a hard task to convince him. Nowadays, the beekeeper can provide himself with some "Facts about honey" which are printed for the benefit of the trade, and show his customer that this is not a new-fangled swindle, as my druggist thought at first. We had no one to back us in our sales, since we were the first in the country to adopt the honey extractor.

There will be more demand for honey than the beekeepers of the world can fill when the public is fully convinced that they can buy pure honey, for no one doubts the value of honey as food.

PRIZE CONTEST

We want to know what kind of material is of greatest interest to our readers in order that we may be able to publish a better Journal. To find out, we make the following offers:

Contest No. 1

For the best letter of not more than 300 words, telling what you like best about this year's American Bee Journal, and your reason therefor, we will pay

$10 in Cash.

For the second best letter, $5 in cash, and for third prize, choice of any book published by our firm. Look over all the numbers of the year 1921 and tell us what article pleased you most or was most helpful to you or what particular feature was most worth while.

Contest No. 2

We want more good pictures. It is true that we already receive far more pictures than we can possibly use, but these we file away with the name of the person from whom they come, in the hope that they will later be of use. The more we have to select from, the better the variety we can use in each number. We want at least ten to choose from for every one that we can find room for. For the best photograph illustrating any phase of beekeeping we will pay

$10 in Cash.

For the second best, $5, and for the next five, choice of our dollar books on beekeeping. Only good, clear photographs suitable for reproduction are of interest to us. New methods of manipulation, new items of equipment, attractive ways to arrange an apiary, or anything of interest to the beekeepers, may be shown.

Contest closes January 1.

Address letters and photos intended for this contest to Contest Editor, American Bee Journal, Hamilton, Ill.

Price of Hubam Seed

Hubam annual sweet clover seed is starting this fall at a price of about $120 per bushel, or $2 per pound, only about one-fourth of the price of the seed last year.

AMERICAN BEE JOURNAL

Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language.
Published Monthly at Hamilton, Illinois.

Entered as second-class matter at the Postoffice at Hamilton, Illinois.

SUBSCRIPTION RATES—In the United States, Mexico and Canada, $1.50 per year; five years, $6. Other foreign countries, postage 25 cents extra per year

All subscriptions are stopped at expiration. Date of expiration is printed on wrapper label.

THE STAFF

C. P. DADANT .....Editor
FRANK C. PELLETT .....Associate Editor
MAURICE G. DADANT .....Business Manager

THE EDITORS' VIEWPOINTS

THE MILLER MEMORIAL FUND

Receipt of contributions for this fund have been made in the bee journals and the thanks of the committee which has the fund in charge is extended to each contributor. These thanks are extended in behalf of the thousands of friends of Doctor Miller everywhere, who are anxious that this memorial shall be worthy of the man.

As is well known, the undersigned committee was chosen by Mr. C. P. Dadant to act informally in collecting and expending the money to be contributed by the many friends of Doctor Miller. At the time of the first announcements it was quite impossible to tell what form the memorial should take, and as a result the whole matter was presented in quite an indefinite way. Suggestions were made to the committee of various forms in which the memorial could be established. Some desired a monument to be erected at his grave, but this was quite disapproved by most of those with whom we could talk, because it did not seem fitting that Doctor Miller's memory should be perpetuated in such a manner.

Following out the widely approved idea that this fund should be put to work for the benefit of beekeeping for all time, which is the type of memorial that fits the character of our esteemed friend, the most feasible suggestion seems to be to establish a library in which may be collected the books, journals and reprints of scientific articles on bees and beekeeping, available to those who desire to make special studies in this field. Such a memorial will be less widely available than we would wish, but it follows out the ideas of the many friends who are interested in the fund better than any other that has come to us. This is what we shall work for.

The location of the library is, of course, still undecided, and the method of management and the safeguarding of the funds for the future are matters which can be determined only after we are able to know how much will be available, but in any event we hope to establish a fund which shall be permanently invested so that the interest shall be used for the furtherance of this library.

For the funds available we know of no more important endowment than this one, for there is today no library in the United States that approaches completeness in this field. There are several excellent private libraries on beekeeping and also several growing institutional libraries of great value, but we hope as the years go by that the Miller Library of Beekeeping will surpass any of them. We also hope that contributions of valuable books and pamphlets will be made so that this library will grow rapidly.

With this definite plan we make another appeal to the beekeeping friends of the late Doctor Miller to contribute still more liberally than they have to this fund. Many are able to increase their contributions, and a still larger number who have not contributed will now, we feel, be anxious to help in this worthy cause. In contributing to a lasting memorial of this kind we not only honor the memory of a great friend but we help in the furtherance of the industry in which we are all so greatly interested. Contributions may be sent to the editors of the American Bee Journal and Gleanings in Bee Culture, and will be acknowledged through these journals. May we not ask for greater liberality now that we are able to announce a more definite plan, and may we not all unite in making this a project in which all beekeepers throughout the world may take just pride?

We would also ask that at the meetings of beekeepers for the next few months this project be brought to the attention of those in attendance so that they may have an opportunity to make contributions. Several beekeepers' associations have already taken such action and in this way liberal contributions have been made. We ask for the hearty co-operation of each and every beekeeper in this movement and want each one to feel that this is not merely an effort being made by a committee, but that it is a project dear to the heart of every beekeeper everywhere.

C. P. Dadant,
E. R. Root,
E. F. Phillips,
E. G. LeStourgeon,
B. F. Kindig.

Fruit Scare; Honey in Demand

Mr. Honey Producer, do you realize that when fruit is high in price and hard to get, there is more demand for honey? Do you realize also that, if everybody in the country could be convinced that your honey is, really, pure bees' honey, unadulterated, you could not begin to supply the demand for it, at remunerative prices? So do not lose heart, if some one offers you too low a price at wholesale. Get out of your lethargy, and stir yourself enough to apprise the world that you have pure honey for sale, that you guarantee it and will put up any amount of money to back its purity. Advertise; it will pay you, not only for the coming winter, but for many a winter to come. This is not guess work, but the practical experience of the man who writes this, who has sold honey for more than 50 years, with profit.

Honey as Sauce

Years ago, I remember James Heddon arousing my indignation by saying that, at best, honey was only suitable as "sauce." Sauce! That is to say, he could not see the use of honey except as a condiment for something else, a secondary affair. Well, I don't see it that way. Every morning I eat honey for breakfast, on either bread or hot cakes, not as a sauce, but as the principal ingredient of my meal. The bread or cakes are only used as a carrier for the honey. Of course we can use honey also on different dishes. But the man who does eat honey, without the idea of securing the high flavor of the flowers from which it was gathered, is not a lover of honey. If you add butter, or jelly, or any other edible than good bread or cakes to your honey, you spoil or hide the fine flavor of it and you deserve to be condemned to eat nothing better than the vile corn syrup which many people call a delicious food. Don't mix fine things with other things of less delicate flavor if you want to get the full benefit of them. The great fault with our people is that they don't really know "how to eat"; they gulp down their food. They do as the drunkard who does not want a light, tasteful drink, but seeks the kick, and wants it hard. Let us learn how to eat, and we will then appreciate pure honey from the blossoms, the finest gift of nature, the ambrosia which was said to be the aliment of the gods in Olympus. The Greeks, at least, knew honey to be something more than "a sauce."

F. W. L. Sladen

In another column the reader will find an obituary of Mr. Sladen, by his assistant, Mr. Gooderham. We wish to add a few words.

Mr. Sladen was an ardent naturalist and scientist. To appreciate it one needs only to peruse the pages of his two leading works, "The Humble-Bee" and "Queen-Rearing in England." A slight awkwardness in his speech, especially when he used some foreign language like French, pre-

vented those who met him for the first time from fully appreciating him. But those who read his writings grasped the full value of this able observer. His descriptions, his enlarged photos of the nests, the eggs, the larvæ of Bumbus, his colored plates of this insect, show a minuteness of details which place him among the men whose work cannot be excelled.

Although his book on "Queen-Rearing in England" is not indispensable to the practical American queen-breeder, it has some excellent cuts and a number of good points not to be found elsewhere. The beekeeping world loses in him one of its best scientists.

More Bee Pasture

The extension of the area planted to sweet clover is opening hundreds of new locations suited to commercial honey production. The change of attitude toward this plant is one of the remarkable developments of recent years. From a despised weed it has come to be regarded as one of the most dependable agricultural staples. Farmers are sowing it everywhere and there is every indication that within the next ten years there will be at least ten times the amount of sweet clover grown on the farms that is to be found now. It seems adapted to almost every type of soil which is not lacking in lime, and succeeds from Canada to the Gulf States.

As a soil builder it has no superior, and this fact is largely responsible for bringing it into the favor of the farmer. The new annual now being boomed under the name of "Hubam Clover" fits in with a crop rotation much better than the biennial form. Since its general use would greatly increase the available forage for the bees, beekeepers should lend every encouragement to its further spread. Sweet clover has doubled the average of surplus in many places and has made many good locations where beekeeping was not profitable prior to its coming.

Everywhere one goes, one hears stories of success with this plant as a farm crop. Not long since, the writer heard of a man who bought a run-down farm in New York and sowed a field of sweet clover. A fortunate combination of a good seed crop and a high price enabled him to pay for the farm with the one year's crop. It is farther west, however, where it seems to be most popular. In almost any section of the Mississippi Valley one hears of many fields of it being sown.

Wintering Bees

One of the profuse bee writers of 40 years ago, James Heddon, wrote this axiom: "Beekeeping is a business of details." This is certainly correct, for though a bee owner may harvest large crops when he neglects the details, he will not have complete success unless he looks after them.

Wintering is probably more a matter of details than any other part of the business.

The honey, or the food, whatever it be, must be of good quality and sufficiently plentiful. Fruit juices kill bees as promptly as paralysis or the Isle-of-Wight disease. Honeydew is not much better, neither is honey which is loaded with numerous pellets of pollen. But it is also necessary that the food be located properly, above the cluster as much as possible. Our Canadian neighbors who feed sugar syrup, after the crop, so as to fill all the room that the bees may have above and under the cluster, have evidently found out that this food helps carry the bees with very little residue, until a good part of the bad season is over.

The strength of colonies at the opening of winter is very important. If they do not have a good number of young bees, there is much chance for them to become reduced in strength before the queen has occasion to breed again. But they must not be breeding at the opening of winter, for quiet is indispensable. They must not be disturbed in the least, especially when the weather is cold and the bees that wander from the cluster may be chilled.

Comparatively weak colonies may be wintered safely if in good condition and if they do not have a large space to keep warm. We have wintered colonies on 5 combs, when these were full and the cluster covered them readily.

Shelter against polar winds is of importance. The name of polar winds, used by Mr. Langstroth, seems very appropriate, for the Mississippi Valley and the Lake region do not have a single good-size mountain to shelter them against the winds that blow from the direction of the north pole. A splendid windbreak is one of thickly planted pine trees or other evergreens. The thermometer is often several degrees warmer on the south side of such a shelter. But an artificial windbreak is readily made, though it is not quite so efficient.

A good cushion over the cluster, which would act like a heavy woolen blanket over your bed, absorbs moisture without allowing a draft of air, and is of great importance where the bees are confined for several weeks without being able to fly.

How shall we winter, in the cellar, in the open air with outer cases, or with only temporary shelters?

This is a question of locality. What will succeed in one part of the country will not do in another. If our bees can get a flight in fairly mild temperature once every 3 or 4 weeks, they will winter readily without much protection. If the cold spells are protracted they will require more warmth. When they are to be confined 2 months at a time without any let up in the cold weather, they will probably be best in the cellar.

But don't let us forget that "Beekeeping is a business of details." The little details effect the difference between success and failure.

Food Value of Honey

We are in receipt of an extract, in bulletin form, from the American Journal of Physiology on the "Vitamine Content of Honey," by Messrs. Philip B. Hawk, Clarence A. Smith and Olaf Bergeim, of the Laboratory of Physiological Chemistry of Jefferson Medical College, Philadelphia.

The details given in this bulletin are too scientific for the average reader, but the conclusions are in plain English which anyone can understand. We quote:

"An examination of the chart will show that the bread with honey was digested and left the stomach as quickly as the bread alone. Similar pepsin values were obtained; and while there was a slight depression of acidity, such as always follows the ingestion of foods containing much sugar, digestion was completed as soon as with bread alone, although the addition of the honey had practically doubled the food value of the product from the energy standpoint.

"The use of honey with bread and in similar ways would, therefore, appear to be generally preferable in the case of children to the eating of candies. Honey serves to make the highly nutritious bread more palatable, leading to a greater consumption of body-building foods instead of depressing the appetite, as is likely to be the case with candies which are eaten betwen meals. At the same time, honey furnishes to the body very considerable amounts of energy in the most available forms. The high place given to it in the diet is therefore well deserved."

Death of Miss Godfrey

It is with regret that we learn of the rather sudden death of Miss Mattie C. Godfrey, which occured in Sacramento, Calif., on September 28.

Miss Godfrey will be rembered by our older readers as compositor with the American Bee Journal previous to 1918. She had been a faithful employee of the American Bee Journal for thirty-five years, seeing a succession of editors during that time. To anyone who has known her and realized her untiring integrity and devotion to her work, as have we in this office, her death comes as a personal loss.

Death of Pioneer Beekeeper

We regret to announce to our readers the death of Mr. W. Muth-Rasmussen, who died at his home in Independence, Calif., some weeks ago. Mr. Muth-Rasmussen was one of the oldest of California's beekeepers. In our January issue Mr. Pleasants mentions him as having been one of the first users of the Peabody extractor, having had one shipped to him in 1871.

Looking back over the files of the American Bee Journal, we find Mr. Muth-Rasmussen's name prominent as early as 1874, when he was one of the charter members of the Los Angeles County Beekeepers' Association. In May of the same year he wrote an article for publication, giving notes on the honey flora, crops, etc., of California. Since that time he had been a regular correspondent. He was a successful beekeeper till the time of his death.

A WORD ABOUT TRUCKS

Notes on the Beekeeper's Requirements for Outyard Work

By E. F. Atwater

Many beekeepers who operate a number of apiaries use the Ford truck, and its very low first cost, most moderately priced repair parts, and light tire and gasoline expense, all combine to make it a very good truck for those, at least, whose yards are near home and on good roads. But hereabouts the beekeeping purchasers of Ford trucks usually find it necessary to equip with oversize tires and shock absorbers, and very desirable to add the self-starter, when, with all these added, the cost is not so low but that the man whose yards are on rough, hilly, or sandy roads, and perhaps long distances from home, may consider paying more and buying a truck which can make better time on the road, and with more surplus power to pull through sand, mud, or up steep grades.

Hereabouts, the Ford truck is about third in popularity, with the most extensive producers, and these men of many yards are some of them devoted to the Olds, and others to the Reo, with the Maxwell used by one or two. The Olds and Reo are both sturdy, amply powered, speedy outfits, for their size and price.

One of our own outfits is shown in the cut, with trailer, both occupied with empty 5-gallon honey cans. When loading the trucks with cans or empty supers of comb, "the sky is the limit."

Our other truck is a small Republic, and after one or two more seasons will likely be converted into a one-ton, four-wheel trailer. Both trucks are equipped to haul trailers, to be used when necessary, which is very often, indeed. All trucks should be equipped with spring trailer hitches, to save jerking, which is very hard on a truck or car, and the springs should take up both pull and thrust.

The truck body should be of convenient size, and after the use of a top over each of your trucks, tops covering seat and entire body, we cut off the tops, so as to have cabs only, as it is an intolerable nuisance to have a top when loading or unloading, a veritable back-breaker, as one cannot straighten the back between lifts. Along the sides of the body heavy hooks should be bolted, so ropes can make the load secure.

We always carry shovel, axe, towing cable and a powerful lever pull-out machine, so as to be ready to get out of a mud hole; also a broom to sweep out the body before loading bees or honey.

Where the roads are rough, spring breakage can be materially reduced by the use of a good set of rebound snubbers, or shock absorbers of some kind.

The two-wheel trailer is fairly satisfactory, but the four-wheel trailer is in some ways much better, as it can be readily loaded or unloaded while uncoupled from the truck, while the two-wheel trailer must be blocked up if loaded or unloaded while not connected to the truck. Our small trailer body is about 45 inches wide by 84 inches long inside, and takes 10 ten-frame bodies, or 12 of the eight-frame size, on the floor. The trailer tongue must be twice as strong as you think necessary. We thought ours was amply strong, but one day when we had a load of extracting supers of empty comb, about six stories high, and were going about twenty-five miles an hour, it broke. The front end of the trailer went down, struck the ground, and the entire trailer and load turned over in the air while making a clear jump of about a rod. The damage was considerable. We use a larger and stronger tongue now. The local blacksmith suggested a stick eight by eight inches, but it is not quite so large.

With as much care as bees require here, the automobile expense is one of the heavy items involved in commercial honey production, which it scarcely seems possible greatly to reduce, as with often rough roads, the gas, oil, tires and repairs run into a large sum each year; yet can we afford to use slower, cheaper trucks when, with a crew of several men, we would then waste much more time on the roads?

The seat of the truck as shown, accommodates comfortably three men, if none is large, while for a fourth man we have a folding auxiliary seat which attaches to the outside end of the seat, on the opposite side. When we must carry six men, we use cushions between the fenders and hood, and a man sits on each side, on and leaning against, a cushion. When the bees have given up their attempts at swarming, we need not carry so large a crew.

We hope some day to have two sliding bodies for the truck, then when we arrive home, the entire load will be slid into the extracting house and a waiting load on empties slid onto the truck, ready for a trip to other yards.

Idaho.

A big load of cans

WHAT YOU GET FOR YOUR MONEY

By Frank C. Pellett

In these days of price readjustment we feel that a statement of conditions as they confront the publisher is due our readers. We are especially pleased with the number of letters received paying compliments to the quality of the American Bee Journal. For every one complaining of the subscription price, we receive several of commendatory tone.

We have recently figured our expenses and find that it costs us 20 cents per copy for every number of the Journal as now published. Of this the advertisers pay 8 cents for the privilege of placing the merits of their goods before our readers. After deducting the money received from advertising, it still costs us 12 cents per copy, or $1.44 per year for every subscription filled under present conditions. It will be seen that the profit to the publishers is only one-half cent per copy, or six cents per year per subscriber.

There has not been a time within recent years when it was possible to get out a trade journal of the quality we are now sending out for less than $1.50 per year. When the recent decline in paper prices came we added eight pages to the size of the Journal. This equals 16 pages of the size of most of the bee magazines, which we have added to our former output.

Judging from the letters received from our readers, we believe that the great majority of them prefer a high-

class magazine at $1.50 per year, to a poorer one for less money. Since we could not reduce the subscription price without reducing the size or quality of the Journal, or printing it at a loss, we propose to spend any saving which may be possible through lower costs of publication, in making a still better Journal. We have other improvements in mind which we hope to add just as soon as the costs of publishing are reduced to a point which makes it possible.

In no other product of human endeavor does the consumer get so much for his money as in magazines. It costs us more than $2,500 to assemble and publish a single issue of the American Bee Journal, yet the subscriber gets his copy for 12½ cents, or $1.50 for 12 issues, which cost us $30,000 to publish. This is possible because the cost is distributed among so many individuals. A half-tone cut, to reproduce a single one of the many pictures which we show, costs about $4.00, yet it is as good for 20,000 copies as for one. The same thing applies to the cost of setting the type, which takes no longer for a large number of copies than if only one was printed.

Again, we wish to express our sincere appreciation of the hundreds of letters of encouragement which have reached us during the past few months. A number have said that the American Bee Journal is the finest publication of its kind in the entire world and this encourages us to make an extra effort to make it worthy of the high confidence of our readers.

F. W. L. SLADEN

Passing of the Dominion Apiarist of Canada

By C. B. Gooderham

On September 10, Mr. F. W. L. Sladen, Canada's Dominion Apiarist, died of heart failure while bathing at Duck Island, in Lake Ontario. Mr. Sladen had been suffering from heart trouble for several years, and only three years ago was ordered by his physician to take a long rest. It appears that Mr. Sladen, who could not swim, had been in the habit of bathing in shallow water at the edge of the lake, after finishing his work with the bees, and on Saturday went into the water as usual, when he was suddenly stricken with heart failure. Mr. Sladen was not missed from his tent until the next morning, when a search was made by Mr. Thomas, the lighthouse keeper. Mr. Sladen's clothes were found on the shore and the body was found in the water about seventy feet from the shore.

Mr. Sladen was born in 1876, at Shooters Hill, near London, England. He was educated privately and commenced beekeeping at the age of 13. He also became keenly interested in the bumblebees and solitary bees and spent nearly all of his spare time in studying them.

At sixteen he wrote "The Humble-Bee; Its Life History and How to Domesticate It." He also wrote a series of articles on the wild bees for the British Bee Journal. In 1896 he visited India to study the bees of that country, especially Apis dorsata, A. florea and the domesticated varieties of A. indica. In 1901 he visited prominent beekeepers in Canada and the United States. It was in March of that year that he discovered the function of Nassanoff's organ in the honeybee.

All this time Mr. Sladen was specializing in queen rearing and bee breeding, and he developed a hardy golden bee suitable for the trying English climate. The subjects of

F. W. L. Sladen

queen rearing and bee breeding were studied thoroughly and in 1904 he published his book, "Queen-Rearing in England." A second edition of this book was issued in 1913.

In 1912 he joined the staff of the Experimental Farm at Ottawa, as assistant Entomologist for Apiculture, and in 1914, when the Bee Division was separated from the Entomological branch, he was given the position of Apiarist in charge. In 1920 this position was changed to Dominion Apiarist.

Since coming to Canada Mr. Sladen has done much for the advancement of Apiculture. Almost his first work in Canada was a study of the honey-producing plants from coast to coast and of the conditions under which they secrete nectar. He has also given much study to swarm control, and developed his two-queen system by which swarming is controlled and the queens are wintered over in each hive. He has also devoted considerable study to wintering problems, and recently issued Bulletin No. 43 on "Wintering Bees in Canada."

Queen rearing and bee breeding, however, have been Mr. Sladen's first consideration, and experiments have been carried on annually by him in different parts of Canada. In 1919 a mating station was established on Duck Island and isolated matings became a fact. The experiments were continued during 1920 and 1921, and a large number of queens have been reared at Ottawa and transferred to the island for mating with drones of special breeding. Excellent results have been obtained and purely mated queens have been distributed to branch farms and beekeepers in different parts of the Dominion. It was while carrying on this work at the Island that Mr. Sladen met his death.

A PROBLEM FROM INDIA

Dear Mr. Pellett:

A friend of yours suggests placing before you my difficulties in beekeeping, and I do so in the hope that your experience and researches may have embraced sections whence the same troubles have arisen.

The principal enemy to our bees, so far, is a large hornet (more than one kind, moreover) which infests these parts. These hornets hover in front of a hive entrance and carry off the workers bodily and devour them. We destroy their nests when discovered, and I am experimenting with a wire frame placed in front of the hive to allow the workers a better chance of getting away from the hornets. This latter is only a partial success so far, though a decided step in the right direction. Do you by any chance know of any similar trouble, and how overcome?

Norbert T. Gill, India.

Answer.—Beekeepers of South Africa report that some species of wasps, commonly called bee pirates, are a very serious pest in that country. Various methods of dealing with them have been tried, with more or less success. Sometimes they are killed by swatting them by hand as they fly about the hives. This method, however, is tedious and unsatisfactory, as the beekeeper can hardly remain long enough at the hives to do effective work. Traps of different patterns have been used with some success. A common way is to daub bird-lime on branches of trees and place them near the hives. When the pirates alight on the branches they are held by the sticky substance.

A white plate or basin filled with water and oil is also recommended. This is said to be the simplest and most effective method of all. Paraffin is the best oil for the purpose. Some bees will also fall into the basin, but the number is small compared to the number saved by the destruction of the pirates.—F. C. P.

A RECORDING SCALE

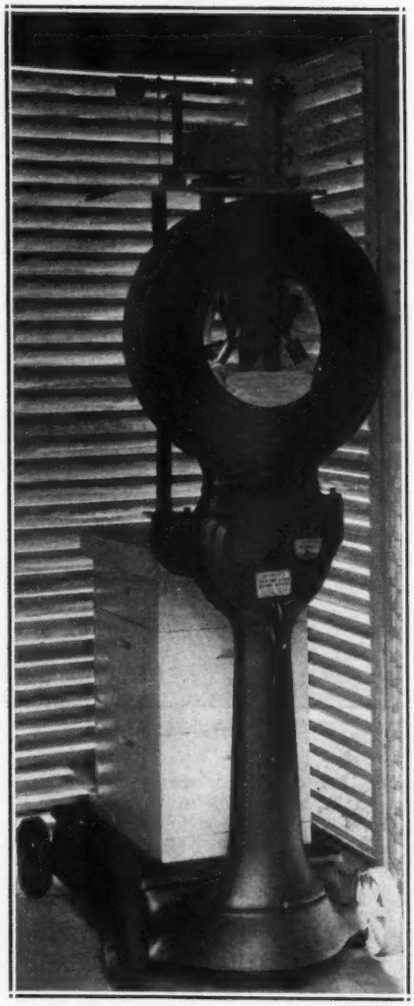
Details of a Scale Which Records the Changing Weight of the Colony, Hour by Hour, as the Bees Bring in the Honey

By Lloyd R. Watson, Apiculturist Texas Experiment Station

A scale so constructed as automatically to record time and weight is being used at the Texas Agricultural Experiment Station at College Station, in a series of experiments with bees. The periodical weighing of colonies of bees to determine the loss or gain over a given period, is common among apicultural observers, and a very few more or less crude devices have been employed at one time or another to obtain continuous weight records of colonies of bees. To H. B. Parks, formerly connected with the above institution, is due the credit for devising the instrument, by the use of which exact, continuous, automatic record is being kept of the variations in the weight of a colony of bees.

A careful survey of available apparatus made in the light of the exacting requirements of the experiment quickly demonstrated that there was nowhere in existence an instrument that would answer the purpose. For example, the scale must be able to carry a constant load running as high as 300 pounds. The recording mechanism must run at least eight days after a single winding, and it must be able to record changes of load within a range of 20 pounds at any point between 50 pounds and 225 pounds every second of the time. The apparatus must be housed to protect it from the weather, yet meteorological conditions surrounding the hive on the scales must duplicate as far as possible those surrounding a hive in an open apiary. Therefore the scale must be constructed to withstand for an indefinite period of time the action of the weather, and especially the corroding action of humid air. As the result of much study and after considerable correspondence with some of the leading scale manufacturers of the United States and with the United States Bureau of Standards at Washington, D. C., it was decided that the Automatic scale built by the Toledo Scale Company was best adapted to be connected up with a recording clock for this purpose. Julien P. Friez & Sons, of Baltimore, furnished the eight-day clock, and the same firm was engaged to make to special order the eight-inch revolving drum which was to carry the record chart. Mr. A. H. Emery, a mechanical engineer of national reputation in scale construction, residing at Glenbrook, Conn., was employed to construct a super-platform over the dial of the Toledo Scale and to build and mount thereon the system of levers by which the rise and fall of the arm of a lever in the body of the scale should be converted into the sweep of a pen across a moving belt of paper.

The construction and methods of assembly will be better understood from the accompanying photographs. Photo No. 1 shows the complete scale. No. 2 is an enlarged view of the lower lever, and No. 3 is an enlarged view of the upper lever and recording mechanism. It will be seen that motion for actuating the recording mechanism is obtained from an extention to the left of the large lever in the body of the Toledo scale, and attachment is made by means of a bolt clamping device. A vertical support



Colony of bees on recording scale

near the left side of the super-platform carries the upper lever over a pair of plate fulcrums. The short end of this upper lever carries a counterpoise weight at its extreme left end and a sensitizing weight above the fulcrum. At the right of the platform another vertical bracket carries stops which limit the motion of the lever. The pen lever rotates on a pivot and its short end is in the form of an arc which is belted to the upper lever with a steel belt. This arc also has a small weight belted to it to keep the belts taut. The sensitizing weight is set so that this whole upper system is as sensitive as possible. In fact, when the steel ribbon which connects the weighing mechanism with the recording mechanism is disconnected at its lower end, the large counterpoise and the sensitizing weights permit of such delicate adjustment that the whole upper system of levers is in stable equilibrium, and the pen will rest at any point where it is placed. The least change of load will then move the pen through its whole range of motion. The record drum encloses an eight-day clock which causes it to make nearly a complete revolution in seven days. The pen, pen-arm, journal and bracket were made by Julien P. Friez & Sons, Baltimore, Md. The record chart was designed by the writer. It is ruled with curved lines coinciding with the sweep of the pen, and corresponds to the 24 hours of the day. Horizontal parallel lines traverse the paper and each line corresponds with one pound change in load.

The recording scale is mounted upon a solid, one-piece, concrete base and is sheltered in a substantially built house patterned after the regulation weather observation shelters of the U. S. Weather Bureau. Not only can the sides of the house be removed at will more nearly to place the bee colony which is under observation, under more normal apiary conditions, but the concrete base on which the house stands contains a wing or projection out in front so that the scale can, at the option of the observer, be rolled out from under the roof and into the full light of the sun without the least jarring or shaking of the hive.

IT PAYS TO PROTECT BEES, EVEN IN OPEN WINTERS

By J. H. Merrill, Apiarist, Kansas State Agricultural College and Experiment Station

As has been previously reported in the American Bee Journal and the Journal of Economic Entomology, an experiment has been going on at the Kansas State Agricultural College for several years to determine the best method of wintering bees. In previous reports it has been shown that a two-story hive is preferable to a one-story hive for wintering, that a windbreak is very valuable, and that the expense of packing hives is more than offset by the resulting increased strength of the colonies.

In this experiment there are two sets of hives—one set placed in the open and the other sheltered by a windbreak of shrubbery. Each set consists of one one-story unpacked hive, one two-story unpacked hive, and one two-story hive packed with leaves. In the fall of the year the

number of bees in each hive and the amount of honey in each are ascertained by a system of weighing. In the spring of the year they are weighed again to determine how much honey has been consumed during the winter, and also to determine whether each hive has gained or lost in its number of bees. The winter of 1920 was such an open winter that the remark "There was no need to pack this winter because the bees had so many chances to fly" was frequently heard. Consequently, the results of the spring weighing were looked forward to with more than ordinary interest, as they would either prove or disprove the above quoted statements.

In the fall of 1920, when the hives were left for the winter, the one-story unpacked hive, unprotected by a windbreak, had 41,458 bees. On May 17, 1921, the spring weighing showed that this hive had only 16,100 bees, or 25,358 less than it had in the fall.

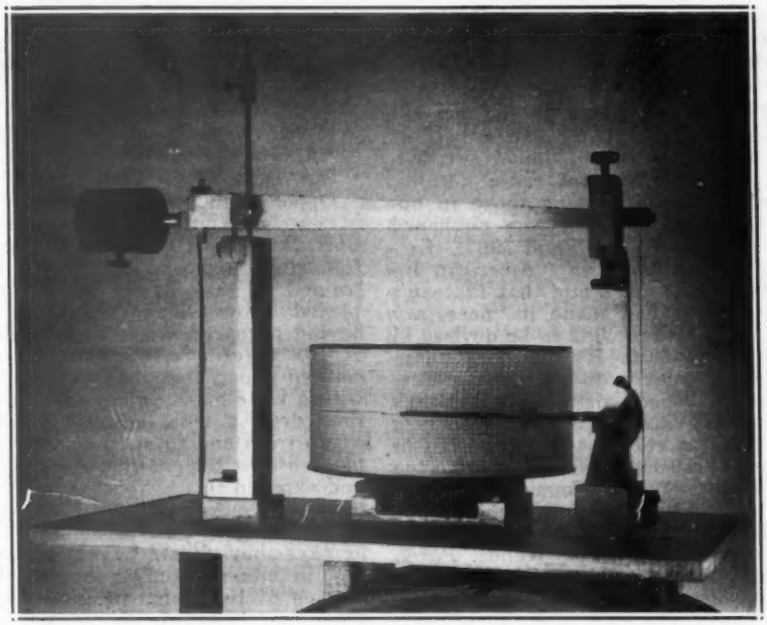
The one-story unpacked hive, which was protected by a windbreak, had 35,625 bees in the fall and 26,825 bees in the spring, or a loss of 8,809. It will be noted that the loss of the protected hive was only about one-third as great as the loss in the hive which was not protected by a windbreak.

The two-story unpacked hive, unprotected by a windbreak, had 42,375 bees in the fall, and 40,850 in the spring, or a loss of 1,525. The two-story unpacked hive which was protected by a windbreak, was one of the weakest colonies in the fall, having only 17,184 bees in the fall, but in the spring it has 21,213, showing a gain of 4,029. It will be noted here that the colony in the windbreak wintered better than the corresponding colony in the open, and the superiority of the two-story hive over the one-story hive for wintering is very plainly shown.

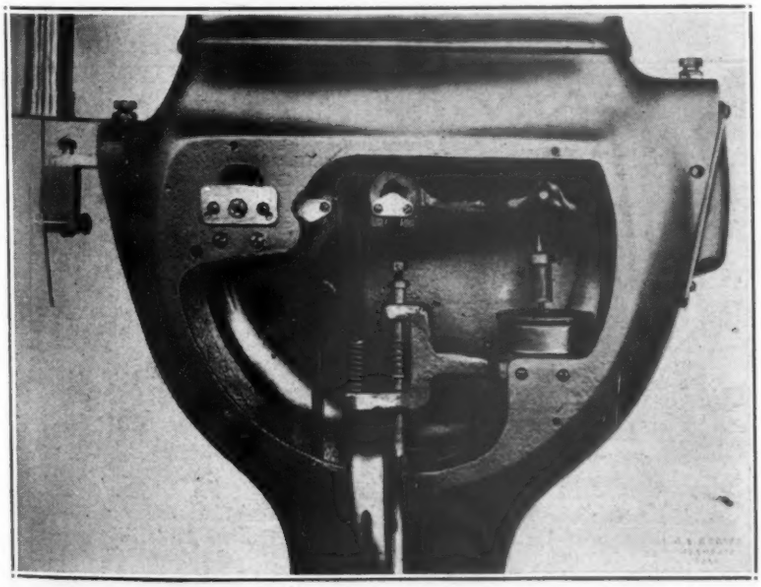
The hive in the packing case, which was in the open was blown over during a heavy wind and so seriously injured that it cannot be considered in these results. However, the packed hive in the windbreak very plainly shows whether or not packing paid. It had only 26,250 bees in the fall, but when the spring weighing was made it was found that there were 73,825 bees in the hive, or a gain of 47,575 bees.

The results obtained from the packed hive showed that the packing was more valuable during the open winter of 1920 than it had been during any of the four years during which this experiment has been carried on.

The continuation of the evidence showing the value of a windbreak, plenty of stores, and the superiority of the two-story hive over the one-story hive, indicates that those are all valuable factors to be considered in wintering bees.



The recording mechanism which makes a record of the change in weight



The internal mechanism of the scale

THE HONEYBEE AND COLOR VISION

By Geo. D. Shafer

Does the honeybee possess color vision? In substance this question has been asked many times by many people—by practical beekeepers, by botanists, by zoologists, and by physiologists. Some have answered "yes" to the question; others have answered "no," and others still are of the opinion that neither answer has yet been made with certainty—with evidence that is quite convincing. It might be supposed that this question would be of first interest to the beekeeper, the zoologist, or the physiologist, but it seems to have been a botanist who really published the first answer. Chr. K. Sprengle, in 1793, expressed the view that the insect is allured from afar by the color of the whole flower, and when it comes close to the flower, that color stripes and flecks of color on the petals or other parts show the insect the way to the "honey container" or nectary. Eighty years later (1873) Herman Muller said that under similar conditions one kind of flower was visited the more often by insects the more pleasing it was to them. He believed the flower perfume was a strong means of attraction, but he emphasized that insects show a preference for colored flowers. But it was not until 1876, when Darwin gave the weight of his great influence (and that of his experiments with bees on Lobelia) to this answer, that it actually attracted much attention and began to obtain wide acceptance. In 1883 Lubbock published experiments which he thought tended to show that bees prefer blue to other

colors. Thus gradually developed the notion that insects (especially bees) can see at a distance, that they perceive color, and that they show color preference.

From 1793 down to the present time at least a score and a half of workers have given important evidence for or against these notions. Most prominent among those in opposition was Plateau, who published papers between 1895 and 1907. Kellogg in his book on "American Insects" (page 581) said that Plateau's publications had made it "necessary for more experiments to be devised in support of the theory that floral adaptation of color is due to color preferences of insect visitors." Plateau's papers did start the work of gathering evidence in regard to color vision in insects—especially in case of the honey bee—all over again. Most recent in this country is the work of J. H. Lovell and C. H. Turner. In Europe the works of Wendt, Forel, Exner, Andrae, Buttel-Reepens, and many others might be mentioned—and finally, the work of K. Von Frisch and C. Hess. In 1914 Von Frisch presented a paper and made certain demonstrations before a Zoological Society of Freiburg, where he succeeded in convincing his audience, by demonstrations, that fish distinguish color, and that honeybees can distinguish color. Von Frisch had fed fish, kept in a glass aquarium, for many days on yellow food. Then when he pasted a small bit of yellow paper upon any shade of gray or among other bits of blue, red or green paper, and caused this to approach close against the side of the glass aquarium, the fish (trained to eat yellow food) darted toward the bit of yellow paper, but not toward that of any other color—according to the report. Similarly he showed that other fish, trained to eat red food, seemed to recognize red. His demonstration with bees was as follows: On a table he arranged a series of fifteen gray papers which led in gradual, continuous gradation from white to black. In a chosen place a blue paper of similar size to the others was inserted in the gray series. Over all the papers a thick glass plate was laid, and on this plate, above each paper, a little watch glass was set; but only that watch glass above the blue paper was filled with sugar syrup. The table was exposed where the bees came in numbers, after a time, to get the syrup. Finally, after periods of about twenty minutes, when the bees had emptied the watch glass above the blue paper, it was refilled, and each time the position of the blue paper was changed in the gray series in order to avoid having the bees become accustomed to getting the syrup in a definite place in the series. The bees had been trained thus for two days when the demonstration was made. On the day of the demonstration, a new series of clean papers was arranged under the glass plate with the blue paper in a new position from that of the last feeding. Above each paper (even above the blue this time) a clean, **empty** watch glass was placed and the table then exposed to the bees. It was reported that the bees flew at once toward the watch glass above the blue paper and alighted upon it. Also, it is reported that (when the table was removed) bees, seeking nourishment, flew toward those spectators who had blue cravats or blue hat bands.

Opposed to this experiment with bees which Von Frisch demonstrated, Carl Hess has urged especially the following experiment: Bees were trained to take syrup from a glass placed above blue paper. Then, having prepared a spectrum made up of 158 different contiguous strips of colored paper, the whole was covered with a plate glass. Hess says that he then drew a long, narrow streak of syrup from end to end over the glass plate above the spectrum of colors, and exposed this to the bees. If now the bees would pay especial attention to color rather than to odor of food, he says they should have alighted at first in numbers only above the blue portion of the spectrum. Instead of doing so, however, he reports that they flew to the food regardlessly, now above this and now above that color of the spectrum, and so alighted everywhere upon the food.

Thus Hess, in his latest paper (1918) maintains that bees do not perceive color at all, and he bases his conclusions in regard to color blindness in the honeybee upon experiments which may be classified under three headings: I. Spectrum experiments. II. Tests with colored lights of varying intensity. III. Training experiments. His spectrum experiments tend to establish the following points. First, within certain limits, confined bees always go toward the strongest light when suddenly exposed to a graded band of light through glass along the side of their container. Secondly, when bees confined in the dark in a long parallel sided container are suddenly exposed to the light of a prism spectrum thrown against the glass side or top of their container, they congregate in the yellow green to green portion of the spectrum—showing, as he concludes, that this portion of the spectrum seems brightest to them. Now it is well known that to a normal man, suddenly exposed to a bright spectrum in this way, the yellow portion of the spectrum seems brightest. On the other hand, to a totally color blind man the yellow green to green portion of the spectrum seems brightest—and Hess points out that in his tests it is the same with the bees as with the totally color blind man.

The experiments with colored lights of varying intensity tend to show, according to Hess, that it is the intensity of the light and not the color which attracts bees or causes them to show preference. By changing the intensity only (not the color) of the light to which confined bees were exposed, he says he could change "blue-loving" bees, for example, into "red-loving" bees, and then back again.

The "training experiments" of Hess were quite varied. For example, he used different colored pieces about hive entrances in such a manner that they might be quickly removed or changed, or covered with glass or not as he wished, and he claims that in all cases where it might seem that the bees acted as if they discerned difference in color, he was able to show that it was actually difference in intensity of light which guided the bees in some cases, or more often the sense of smell, and not really color in any case. Again, he exposed food to bees for weeks above a certain color, after which he arranged checker boards of different colors and checker boards of white and black which he could shift quickly under a sheet of plate glass upon which food was exposed (without disturbing the plate glass), and the "color trained" bees, he says, would take food as quickly above one color or one shade as above another. Finally, among other tests, he arranged the "paper strip spectrum and streak of syrup or honey" experiment

Exhibit of C. B. Palmer, of Bradshaw, Neb., at a local fair.

which has already been described. This last experiment he seems to regard as the strongest of all his "training experiments" in answer to Von Frisch. No doubt it will appeal to many readers, however, that in Von Frisch's last demonstration, where no syrup at all was present above any color, the sense of smell of the bees was taken into better account while trying to determine whether they were influenced by color than in these tests of Hess where the final test was made with food present above the colors.

Both Lovell and Turner, in their recent work, reached the conclusion that bees are influenced in their outdoor activities by color, and that they exhibit color fidelity to flowers when gathering nectar. But Turner says that while he thinks his evidence shows that bees recognize color from a distance, he is not sure whether it is a true color vision or only a "grayness discrimination" which they recognize in different colors. Thus it would seem that the question has not yet been answered with conclusive evidence. Who will take into account the honeybee's sense of location, her sense of smell, her ability to distinguish between light intensities to some extent, and her possible recognition of form—and then gather decisive evidence to answer the question: "Does the honeybee possess color vision?"

California.

THE FALSE INDIGO (Amorpha)

By Frank C. Pellett

There are several species of amorpha common to America, but the one which is probably of most importance to the beekeeper is the shrub commonly called "false indigo" or river locust (**Amorpha fruticosa**). It is also known as bastard indigo in some localities. It grows most commonly in damp, shady bottom lands and on the banks of streams. It is occasionally found in upland woodland borders where the soil is deep and rich.

It is from 5 to 8 feet in height under most conditions, but occasionally reaches a height of 15 to 18 feet. It is widely distributed, being found from New England, where it is rare, west to Minnesota and Saskatchewan and south to Florida and Mexico. In Colorado it is reported at altitudes of 4,000 feet in Logan County, and in the river flats east of Ft. Collins. In Texas it is found on the river banks, apparently throughout the State. In Alabama and Georgia it is common, as well as in the middle west. In the southern portion of its range, the flowers appear in April and May, while in the northern regions it blooms as late as July. In Nebraska and Kansas, where it is of greatest importance to the bees, the blooming season is early June or late May. The flowers are deep blue or purple, and are borne in long spike-like racemes, as shown in the illustration. In the Arkansas Valley in Kansas, beekeepers report that it yields both nectar and pollen in abundance. Nebraska beekeepers value it, since it fills the gap between fruit bloom and white clover.

The lead plant or shoestring, (**Amorpha canescens**), also known as wild tea, is a bushy shrub 1 to 3 feet high, which is very common on the plains from Manitoba to Texas and New Mexico. The flowers are very similar to the false indigo and the blooming period is in mid-summer. The name, lead plant, comes from its color. There is a common saying among farmers in Nebraska that where the shoestring is found alfalfa will succeed. Although beekeepers report that the bees work on the shoestring or lead plant, it apparently is not of great value, even on the prairies, where it is common.

In addition to the above species there is the dwarf false indigo (**Amorpha nana**),which is found from Manitoba to Iowa, Nebraska, Colorado and New Mexico. This little shrub, growing on the open prairie, is seldom more than one foot in height. The smooth amorpha (**Amorpha glabra**), is found along the coast from North Carolina to Florida.

There is one representative of the group on the Pacific Coast, the California false indigo (**Amorpha californica**). This species is found in Southern California, Arizona, New Mexico and also in Mexico.

Although, as will be seen from the above description, the group is widely distributed, the writer has not been able to find any localities outside the States of Nebraska and Kansas where it is of special importance to the beekeeper.

The false indigo in bloom.

THE HONEYBEE IN MEDICINE

By Dr. Ransom A. Race

A number of articles have appeared lately in the American Bee Journal on the use of the poison of the honeybee for the benefit of rheumatic conditions. It may be of interest to many to know that the honeybee has, for many years, been a great blessing to people afflicted with various ailments, as well as those suffering with so-called rheumatism.

The first account of the proving of apis, that I can find, was by Dr. A. R. Morgan, of Syracuse, N. Y., in August, 1858, and again in September, 1859, an account of which was printed in the transactions of the New York State Homeopathic Medical Society, Vol. 3, 1865, page 104. Since then many provings have been made by others, and verified in clinical use, until today the symptomatology of Apis mellifica is complete and extensive.

As first prepared, the live bees were put in a bottle, which was well shaken to irritate them. Five times their weight of dilute alcohol was poured upon them. The whole was allowed to remain eight days, being shaken twice a day. The tincture was then poured off, strained and filtered. This tincture was used for a number of years before the drug known as "Apium virus" was introduced by Dr. Constantine Hering, of Philadelphia, Pa.

Apium virus is prepared by drawing out the sting and poison sac from a freshly-killed bee. Taking hold of the sac, insert the point of the sting into a small glass tube, and squeeze the poison into it; or, take a live bee and allow it to seize a small lump of sugar; pinch the bee and it will immediately sting into the sugar, which will absorb the poison. Repeat the process until enough is obtained to start a tincture, or, if sugar is used, to start a trituration. These drugs

are kept in stock, in various strengths, by all homeopathic pharmacies.

The symptomatology of Apis mellifica and Apium virus is almost identical, so for convenience in writing only one will be mentioned.

The action of the drug on the human organism is the same if taken by mouth, or if injected by hypodermic needle (stinging bee), although its action is quicker when the injection method is used, but the time saved is so little that the great majority would prefer to have the drug administered by mouth in preference to the stinging method of the bee.

Many cases of rheumatism have been greatly improved, if not cured, by the use of apis, but the case of rheumatism must be selected to correspond to drug symptomatogy, the same as in treating any other disease. Not all cases of rheumatism are alike, nor will one drug prove a cure for all cases of rheumatism. The variety of rheumatic conditions in which apis is of benefit, are all accompanied by sharp, stinging pains throughout the affected part, associated, also, with a sensation of numbness and coldness, with swelling and tenderness. Unless these symptoms are present, do not expect apis to do much good.

In dropsical conditions accompanying almost any disease, especially in effusions affecting the lower lids of the eyes, apis is very efficacious, when you have associated with the effusions these sharp, stinging pains.

In skin affections apis is very often a great help, when associated with these same sharp, stinging pains, in fact, these pains are present in nearly all condition for which apis is of use, and they form one of the great "keynote" symptoms calling for its administration.

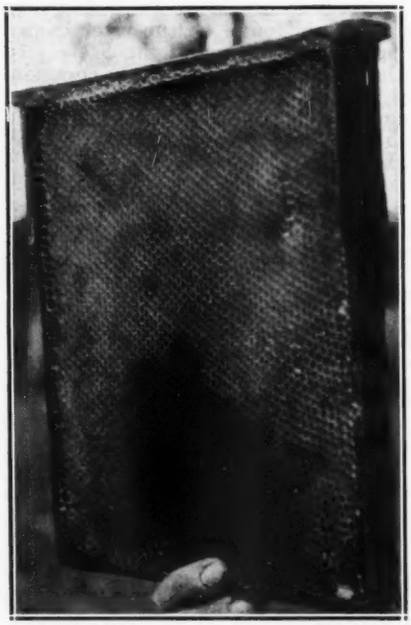
Apis acts specifically upon the cellular tissues, giving as its most characteristic effect, an acute oedema, both of the skin and the mucous membrane. It also affects the serous membrane, producing conditions similar to those which are the products of serous inflammations, such as hydrocephalus, hydrothorax, ascites, etc. In fact, its effects are noted in nearly every organ or part of the body.

One could enumerate many conditions in which apis would be of great benefit, but it is unnecessary in an article of this kind, as I only wished to show that apis is a very useful drug in the treatment of the sick, that it has been in use by physicians for many years, and, that one to derive benefit from it does not have to submit to the hypodermic injection of the drug as applied by our little friends, the bees.

Massachusetts.

ORIGINAL HOFFMAN FRAME

The Hoffman frame has come into such general use in the Langstroth hive that few beekeepers are unfamiliar with it. However, the frame as made by Mr. Hoffman was of another size entirely, as will be seen by the illustration shown herewith. Recently the associate editor enjoyed the privilege of a short visit to the old home of the Hoffman family, where the wife and daughter still reside, and continue in the business of beekeeping. They still have the same hives used by Julius Hoffman during his lifetime. The frame he used was 12 inches deep with a top bar 12 inches long. The comb is accordingly not quite as wide as it is deep. It will be noticed, also, that the peculiar spacing feature now in general use on the end bar was used on the top bar also. It was the self-spacing feature that distinguished the Hoffman frame from others in common use.



Original Hoffman frame, made by Julius Hoffman

UNEDITED LETTERS OF HUBER

(Continued from October)

Gentleness of Bees

To Miss Elisa De Portes

Lausanne, May 15, 1828.

Your mother, my dear Elisa, does not disapprove that I should interest you with the subject of my favorite studies, those good bees which have diverted me from the inseparable sorrows of humanity and have done me so much essential good that they will surely do for you what they did for me, if you are in need of it, and surely will do you no harm. Be it so!

I should like to see bees about you and to think that they will sometimes remind you of the friend who has had so much to do with them. The first and only word that I wish to say to you about them today is not to consider them as formidable as is generally believed; it is a truth proven by me through a half century of observations and which the most simple reasoning might have taught us.

If the bees, the wasps, the humblebees and all the beings that are provided with stings had received from nature an offensive instinct or hostile dispositions, in view of their prodigious number, the wings with which they have been provided and the speed of their flight, the earth would be uninhabitable for us and for all animals.

If chance had presided at this part of creation, such a condition might have obtained, but it is to a Father, to a true Father, that we owe our existence. He has also thought of the happiness of his children, otherwise the bees, instead of being a blessing would be but a curse to us and the treasure that they could bestow upon us would have been a dead loss: their wax and their honey would have cost us too high a price.

If truly fearful weapons have been given to the bees and other insects of their kind, it is uniquely for their defense, to preserve that which is dearest to them—their queen, their young, their companions or their sisters, and their treasures, against the attacks of numerous enemies. When you have given this some thought, kind Elisa, and will believe a friend who has not the least desire to see you struggling against the poisoned dart of the bees, I will advise you, and your mother will permit you to observe my favorites in a glass hive. One finds beautiful lessons in the study of natural history and especially in that of the beings which I have most studied.

Constant obedience to the laws which have been imposed upon them, and the happiness which results from it are a spectacle of the highest interest for us. If wisdom is without merit when it is compulsory, it is a great merit for the bees that we be compelled to seek the Law-maker and see Him in His works.

A thousand caresses for you and yours, my beloved Elisa.

TO THE SAME

The Sting of the Bees Has Been Given Them for Their Defense—Lizard Killed in a Hive—The Odor of the Sting Irritates the Bees.

Lausanne, May 17, 1828.

You do not believe, dear Elisa, that those bees which I desire you to love have invented the laws which rule them. I ended my last letter in telling you what you must believe as I do; that it is to the supreme Lawmaker that our admiration is due, as well as our love and our gratitude, for He has evidently thought of the existence and the well-being of creatures which, like ourselves, have no means of defending themselves against the attacks of those who are constantly provided with a sting accompanied with mortal poison. What would be our fate, if we could not walk about our gardens without being in risk of attack and pursuit from thousands of winged and wicked beings?

Let us see what has been done for those bees, which are, also, his children, by this best of Fathers. If attack has been forbidden them, they have been ordered to defend themselves; do they then have enemies? A very large number of insects and reptiles plot against their treasures and try, through robbery, to enter their homes. Others try to enter there, to deposit upon their combs

eggs which will find there the only food that they need. Since it is every day and at every hour of the good season that the bees are in danger of the invasion of so many enemies, preserving Providence demands of them a sustained watching, very wonderful for the brains of a fly, a supervision in every moment which is worthy of admiration.

I tell you this because I have seen it, not with my own eyes, but through the help of those who have put theirs to my service, and upon whom it has been necessary for me to rely; this observation has been the first one of all those that I have made. I already knew, through others and especially through the eminent Reamur, the fine order which reigns in the bee hives, but I ignored entirely when and how this order could be disturbed; chance taught it to me.

One day we were expecting a swarm to issue; I had stationed myself near the hive which was to swarm.

It was a great glass bell, sheltered from light which would disturb the bees, with a veil that could be removed—just as you remove your own—so that we might see what took place within the hive without causing any noise or jars that might alarm them. It was warm that day, drowsiness overtook me and I went to sleep, with my head resting against the hive which I had undertaken to watch. Suddenly I was awakened by a noise coming from the hive and which appeared to me much greater than the humming that one always hears in the habitations of the bees and which is usually very soft. I rang for Burnens, to seek its cause. Great was our surprise when, after having lifted the veil, we saw, on the bottom board of the hive, a fine and big green lizard, lying on its back and slain with violence, as you will soon see. Near its dead body some thirty dead bees were also lying. Had they been killed by him in defending himself? This was our first impression; but we soon altered it when we saw, driven into the belly of the lizard, all the stings of the bees which had put him to death by sacrificing their own lives for the safety of the household.

Paley says, in his "Physical Theology," that one finds in the insects the models of useful instruments. One finds there also, dear Elisa, beautiful examples to imitate. Is not death in defense of one's country the first and most honorable of our duties? The ancients who did not disregard this, wrote in their beautiful Roman language:

"Dolce et decorum est pro patria mori." (It is sweet and beautiful to die for one's country.)

My sleepiness had not permitted me to see the first act of this tragedy; but other examples of a similar occurrence, noticed in similar circumstances, enable me to tell you without hesitancy what had evidently happened.

The beauty of the weather and of the expected harvest had evidently attracted a third, or perhaps a half, of the workers to the blossoms; those which other cares retained in the hive were probably thinking about the proposed founding of a new home, and perhaps did not, as usual, watch the entrance of the hive against enemies and keep a sufficient guard there.

The lizard was thus able to enter without finding great opposition. He was perhaps lucky enough to eat a few of the sentinels in passing, but it was not with impunity. In case of an attack, general or individual, the rustle of the workers, caused by the rapid buzzing of their wings, produces a sound which may be termed a danger call.

This call, with which I am acquainted, and which I can readily distinguish from any other, is, you may believe, still better perceived by the bees. This buzzing finds an echo in all parts of the hive; when they are made of glass it is as easy to see as to hear it. It is therefore thus that they transmit advice of any danger which threatens them and the request to be on their guard in any part of the home. If the signal which announces danger to them has but the duration of lightning, its effects are truly equal to those of a thunder-bolt.

Worker-bees in sufficient number, and doubtless in proportion to the strength of the enemy, rush upon them and at once put them "hors de combat." We know by our own experience that their death must be as painful as it is prompt.

The bite of the viper, so dangerous, is not at all to be feared when its venom has been drained by repeated biting. That which renders the venom of the bees so painful for us and so deadly for their natural enemies is also the presence, at the end of the two spears which compose the sting, of a bright drop of poison which shows itself on its forward point.

At the will of the irritated bee, the venom is carried, or rather forced, into the body of the enemy and causes its almost instantaneous death, for from the poison sack, located at the root of the sting, the poison has but a short space to travel towards its extremity in order to reach the full depth of the wound which the two spears have produced.

You now know what happened to the lizard of which I wrote a minute ago and how the bees get rid of usurpers. Will you now, my dear girl, take a few steps more with your friend? Please follow the thread which he has put in your hands, in order to help you out of the labyrinth in which you are now engaged, with him.

The hives which are governed by a young and fertile queen and are filled with a numerous population are but little in danger of invasions; I have seen some that did not have to repulse a single attack or need to avenge a single insult during the entire year of existence; I say insults to avenge, because I must acknowledge that my cherished bees are decidedly vindictive; it is their failing and I must not conceal it from you.

One day I ran the risk of testing this myself; having caused a hive to be raised from its bottom to cleanse the latter, the person who was doing this for me probably touched and wounded a few workers. I heard the danger call; some hundreds of workers answered it, rushed out of the hive and upon me; my clothing and the promptness of my flight permitted me to reach the house without being stung. Remember my blindness and think of how little I could have done in my own defense at so critical a moment. Certainly I had to be thankful, and I feel so yet.

The greater number of the bees that had rushed at me returned home, but three or four remained which did all in their power to enter the parlor in which I had taken refuge, by flying against the windows and keeping it up for half an hour with a very remarkable fierceness. When I thought they had withdrawn and imagined I could go safely out of my retreat, one of the most furious workers threw herself upon the person who had taken my arm, stung him miserably under the eye and died herself, leaving in the wound her sting and her entrails. I have often seen their resentment prolonged a much longer time.

Whenever my gardener was raking too near the hives, the workers that rested upon the ground, killed or wounded by the rake, were soon avenged. The danger call was heard within the hives; the gardener was often punished for his clumsiness.

During the two or three days following such excitement, no one could approach the apiary without suffering the effects of the offended bees' rancour. Those that had followed me with the fierceness of which I wrote, would stop sometimes long enough on the panes of the window to enable one to distinctly see the end of their abdomen; and the bright drops of poison on the end of their stings indicated that they had been drawn and poisoned for my benefit.

If the primary cause of their anger was not always noted by us, it was perhaps not so difficult to understand their prolonged anger. The cause was probably entirely natural.

My first thought was that the presence of the escaped poison, its odor probably perceived by the bees, might have an irritating action upon some of their organs. An experiment was to prove it to us; here is what I devised:

We introduced a few bees in a tube of small diameter, the length of which did not exceed 6 inches, its lower opening was hermetically closed, the other could be closed with the finger or in some other manner.

In order that the bees might give this tube the odor of poison, they were slightly disturbed with a straw or the stem of a flower. Then the opening of the tube was presented at the entrance of a hive, after having uncovered it. The effect was immediate; a few bees came out of the hive at once and threw themselves upon us. We would have been stung, undoubtedly, if a veil, some gloves and a good hood had not protected us from their anger.

(To be Continued)

EDITOR OF BRITISH BEE JOURNAL

Among the British bee magazines, the British Bee Journal is best known in this country. It is a weekly publication now in its 49th volume. It has a companion publication in the Beekeeper's Record, which is a monthly in its 39th volume. Both publications are edited by Thos. W. Cowan and J. Herrod-Hempsall. Mr. Herrod-Hempsall is at present the active editor of both publications, and we are showing his photo on this page in order to give our readers an opportunity to get better acquainted with our fellow craftsman across the water.

SWARMING

A Study in Bee Behavior

By Sol. L. Skoss

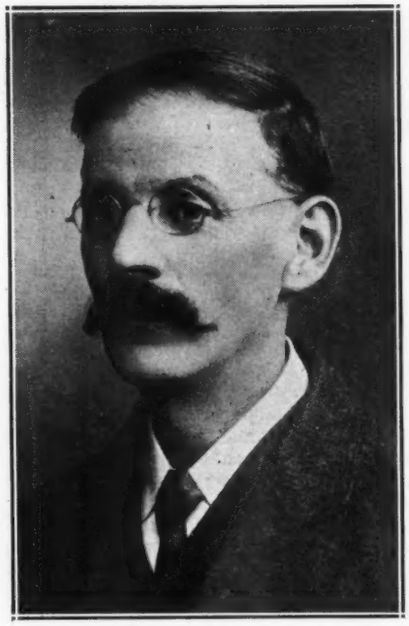
The study of the behavior of bees under the swarming impulse is both interesting and important to every progressive beekeeper. Its importance is best illustrated by the late Dr. C. C. Miller's statement (Fifty Years among the Bees P. 151), "If I were to meet a man perfect in the entire science and art of beekeeping, and were allowed from him an answer to just one question, I would ask for the best and easiest way to prevent swarming, for one who is anxious to secure the largest crop of comb honey."

Swarming has been carefully studdied by various investigators, as well as by many practical beekeepers, for several years. Different theories have been advanced as to its fundamental causes, yet this question is far from being settled. Lack of sufficient ventilation during hot weather, the queen being crowded for space, peculiar conditions of certain localities and seasons are, after all, only contributory causes, which, important as they are in augmenting and promoting the swarming fever, could hardly be considered more than conditions favoring the tendency of swarming.

TheRussian beekeepers hold as a general cause of swarming, the natural tendency of bees, as of many other insects of their class, to form new colonies in that way. Just as the old worn out bees are being constantly supplanted under favorable conditions by young bees emerging from the cells, so are the old families headed by old queens being supplanted by new families and young queens taking the place of their mothers. It is just the natural law of reproduction and of propagation of the species applied to whole colonies, a kind of community reproduction in the same sense as individual reproduction. To quote Frank C. Pellett (Productive Beekeeping, P. 100), "It should be remembered that with bees and other social insects the community is the unit, rather than the individual. The workers are incapable of reproduction, and accordingly no matter how great an increase there may be in their number in the hive, it is but temporary, and makes no permanent difference in perpetuation of the species. Swarming is then the expression of the instinct of procreation or increase."

Of course, one can frequently observe in the same apiary a large percentage of colonies that pass through the entire season without making any attempt to swarm at all. But then the procreative instinct is not developed with all communities, as with all individuals, alike. Besides, there are many special causes which diminish and control the swarming tendency among the bees, as old crippled bees, weak colonies, young queens, etc.

According to the opinion of the German investigator, Gerstung (quoted by Dr. Phillips, Beekeeping, 1915, page 79), swarming is caused by undue proportion of nurse bees to the young brood they have to feed with



J. Herrod Hempsall

larval food, or royal jelly. The hive is full of capped brood before swarming, but very little of young larvæ or eggs are found there at that time. The presence of an excessive quantity of larval food induces the bees to build queen cells and rear queens by the surplus food. W. Z. Hutchinson (Advanced Bee Culture, 5th edition, page 64) and E. R. Root (A. B. C. and X. Y. Z. of Bee Culture, 1920, article "Swarming") are inclined to accept this theory as the prime cause of swarming.

While this preponderance of nurse bees in the brood chamber is a general condition in all colonies shortly before swarming, it could hardly be considered more than one of its chief notable symptoms, on the same order as the invariable procedure of a swarming colony to construct drone comb, depositing drone eggs, and building queen cells. All these symptoms will be manifested in various regions and in different seasons in accordance with the special conditions of the honey flow, favoring the rapid increase of the population of the hive, which in its turn tends to develop the procreative instinct of the community as a whole. The fact that a colony could be induced to give up swarming by taking away all young brood and substituting for same empty combs would indicate that excess of larval food is not the prime cause of swarming, since in this case the food would immediately be increased instead of being diminished (Demuth quoted in above-mentioned article on "Swarming").

So far the question of the fundamental cause of swarming is far from being definitely solved. Unfortunately, too little attention has been paid by serious investigators to this important phase of bee behavior. While the practical beekeeper sought to devise various methods for controlling swarming by removing for the time being the contributory causes which tend to develop the swarming fever, he did very little to find out the prime cause of this phenomenon.

Numerous methods have been employed for the prevention of swarming. Root, in his article on swarming (A. B. C. and X. Y. Z. of Bee Culture, 1920) sums them up into 12 different methods, whereas some Russian text books quote as many as twenty methods for swarm control. However, to all of them would apply Demuth's conclusion, that "any manipulation for swarm control, whether applied after the colony has acquired the swarming fever or applied to all colonies alike previous to the swarming season, is based upon the single principle—a temporary disturbance in the continuity of the daily emergence of brood. This disturbance should occur just previous to or during the swarming season (Demuth, Comb Honey, 1917, Farmers' Bulletin 505, p. 34).

Swarming season varies greatly, according to climatic conditions of different regions, but May and June could generally be considered as swarming months, while in the South swarming begins somewhat earlier.

The procedure of swarming itself is so beautifully depicted by Langstroth, Cheshire, Maeterlink and others, that I shall give here only a brief description, with due regard to the behavior of bees during the process of swarming.

When the flow of nectar is coming in pretty regularly, brood rearing being thereby greatly stimulated, our bee community becomes very populous. The provident bees start to build drone comb and the queen deposits drone eggs therein.

Queen cells are started before the maturing of the drones in their cells. The number of queen cells are rarely less than three or more than thirty, although a beekeeper from Palestine told me that fifty to a hundred queen cells built under the swarming impulse is a frequent occurrence with their native bees. When the cells have already been capped, we may expect swarming any fair warm day.

The following table made by the Russian beekeeper, Butkewitch (But-

kewitch, Manual of Beekeeping (Russian), St. Petersburg, 1911), may be of some value to the practical beekeeper:

From Stages of Development of Queen Cells	Number of Days	
	To prime Swarm	To after Swarm
From the depositing of an egg in queen cell	10	18
From the appearance of young larva	7	15
From the sealing of the cell	2	10
Issuing of prime swarm	0	8
From the "piping" of the virgins		1

The bees do not entirely suspend their work on the day they intend to leave their hive. I frequently observed colonies where the bees were going on with gathering nectar in the morning about the same as usual, yet they swarmed in the afternoon. Neither do the clusters hanging outside the hives invariably signify that those particular colonies are preparing to swarm. Such "hanging out" is probably in most cases due to hot weather and to lack of ventilation.

The colony is often unusually quiet before the swarm is to issue, reminding one of the quietude of the weather before the coming storm. The first signs of excitement are frequently revealed by the queen, who seems to be very restless on the day she is to leave. Instead of her regular routine of work of laying eggs, she is somewhat agitated, aimlessly running around over the combs. Soon the whole colony is in an uproar. Several bees fly and dance in the air in front of the hive with their heads toward it, as though anticipating the coming rush. Yet in the midst of their great agitation they do not forget to provide themselves with a good supply of honey to last them for a few days.

Meanwhile the commotion in the hive is growing very rapidly. Young and old are literally "pouring out" of the hive, as though some mysterious force is relentlessly driving them from their old home. They rush onward as fast as they can, tending to go upward, take wing, and begin to gyrate rythmically, at first around the hive, then extending the area of their merry-making larger and larger until it occupies a large portion of the apiary. There is something elemental in the whole procedure. They seem to abandon themselves completely to their hilarious joy, ringing their wings in great excitement, with a certain rhythm in all their motions.

There is no set rule when the queen leaves the hive. The idea that she leads the swarm is erroneous, for she frequently leaves the hive when about a third or a half of the emigrants are out. She sometimes falls to the ground in her attempt to take wing together with the madly rushing bees, being heavily loaded with eggs and probably dazzled by the bright light of the sun. After a short rest in front of the hive she is up again in the air among her family.

The number of bees participating in a swarm is estimated variously. The Russian beekeepers consider a good prime swarm at six to seven pounds, which quantity coincides with Dr. Phillips' estimate of 35,000 (Beekeeping, 1915, p. 39), considering about 5,000 bees to the pound.

The old idea that all kinds of noise made while the swarm is in the air would induce it to settle is disproved by modern investigators, although Cheshire thinks that there is some truth in it, and on the whole it is correct. It was also probably done in order to inform the neighbors about the issuance of a swarm and thus sustain its ownership. Langstroth reports that flashing the rays of the sun by means of a mirror would make it settle, while many old beekeepers used to throw mud or water for the same purpose, as well as for preventing the joining of two or more swarms together.

Bees, participating in the swarm, being filled with honey are not apt to sting. Yet the general idea among the beekeepers that they **will never sting** is probably wrong, because they do sting under provocation, even while swarming.

But here our merry-makers in the air, after whirling in large circles and dancing for a while, begin to settle in a cluster not very far from their old home. The old queen, heavy with eggs, weak and not used to light and flying, cannot ordinarily make a long flight without first resting, and wherever she alights, the bees cluster with her. Frequently she alights on a spot where some bees have been clustering previous to her arrival.

The wind seems to have a great deal to do with the direction in which a swarm flies. The apiary where I had the opportunity to study swarming last year had a windbreak of eucalyptus trees, the hives being situated, of course, on the side from the wind, where its force was broken by the trees. On the other side of the apiary was an alfalfa field in which direction the wind was blowing. Out of fifty cases of swarming that I witnessed there, not a single one alighted on a tree, most of them settling right on the ground in the alfalfa, while many got into the empty hives that were spread in windward direction for that purpose, notwithstanding the fact that swarming took place on very quiet, bright sunny days.

Something has probably to do with the fact that bees have a peculiar way of settling on same spots where previous swarms have selected to alight. It is explained by beekeepers that a swarm leaves a special odor at the place where it clustered, and other swarms are thereby attracted to the same place. Some Russian beekeepers think the odor of the queen attracts the bees to the place where she once alighted.

It has also been observed that afterswarms frequently fly farther and settle on more elevated places than prime swarms. Young queens are more vigorous and not as heavy as their mother, therefore they can perform better flying feats than the former.

Now that the swarm has settled in a cluster, scouts are sent out to look for a new home. Whether the scouts depart before the swarm leaves the parent hive or shortly thereafter is rather difficult to determine. There happened cases where emigrants left their hive and went straight in an air line to a new home without ever stopping to cluster. More often, however, they clustered for a length of time, from fifteen minutes to perhaps a day or more, until they depart for a new home.

When they get to their new home, a number of the first comers stand on the alighting board and on the walls of the hive with abdomens lifted in the air and fan with their wings. This is probably their mode of notifying the bees left behind them of the new home they located. Soon they begin their steady, uninterrupted march homeward, if the queen is with them.

They settle to work presently without much loss of time. They form a curtain-like cluster and begin to build comb. There is not even a trace of that elemental, hilarious joy to which they have abandoned themselves completely just a short while ago. They

Apiary of J. G. Levac, of Quebec, Canada. As high as 27,500 pounds from 180 colonies have been secured, or 150 pounds per colony

are now very actively engaged in a thorough house cleaning of their new home, mature bees bring in pollen and nectar, and the queen begins to lay eggs as soon as the younger bees have built enough of comb to receive stores and eggs therein.

To return now to the so-called "parent colony." It may or may not cast off an after swarm, much depending on the population of the bees left in the hive. Ordinarily the first young queen emerges from the cell in about eight days after the prime swarm left the hive. If no after-swarm is forthcoming, she may destroy her sisters in the remaining queen cells, the workers frequently tearing them open for that purpose. The virgin then runs restlessly around issuing some sharp notes, called by beekeepers as "piping," while her sisters in the cells answer her call, and are forthwith destroyed. She mates in about five or six days thereafter, and thus becomes the mother of a new colony.

California.

A QUEEN INTRODUCING CAGE

By A. G. Tucker

The accompanying drawing will give an idea of the cage I use for introducing queens. The cage is made of a size to hold an entire brood-comb and has screen sides and light wood or tin ends, bottom and top.

The queen is released as soon as received, on a frame of hatching brood, which is placed in the cage and all made tight so as to admit no bees. The cage is then placed in the hive, after removing two combs to make place for it, the old queen being left in the hive where she was.

In two days remove the old queen and replace the new queen with the frame of the brood back into the hive, removing the cage.

I find in the push-in-comb cage that the bees are apt to gnaw the comb and release the queen immediately. This is obviated by the present plan. The freshly-introduced queen gets the odor of the hive through the wire cloth, and is introduced to freshly-hatched bees at first. Occasional old bees can be admitted, if desired, through the slot, "A," in the cover.

California.

THE THOMPSON SAFETY INTRODUCING CAGE

By James McKee

In August "Gleanings," 1918, Mr. J. E. Thompson gave to the public a cage method that successfully introduced both day-old and laying queens in every instance during experimental tests.

I at once experimented with the new method and found it remarkably successful. I have used it ever since with great success, and I consider it the best method of queen introduction ever yet invented. I can introduce my most expensive queens in this way without fear of loss.

By this method the queen is actually introduced before she leaves the cage. The principle of the cage is as follows: Through a passage, filled with queen candy, about one inch long, over one end of which is nailed a piece of zinc queen excluder, the bees eat into the cage some time before the queen can be released by the bees eating through a longer passage, filled with queen candy, which must be three-quarters of an inch or more longer than the excluder passage.

California.

THE ACARINE MITE

By McCowen Hall

I was greatly interested in Mr. Bruce White's article on the acarine mite, for under the microscope I have found this mite in old pollen, and it suggests itself that the mite has its origin in this old pollen something like the cheese mite. It may be that in old pollen-loaded combs we spread the disease, but then you would think that you would get it in America, which I suppose you do not, do you? I wrote to Mr. Bruce White on the matter and he was very interested and wrote me for further information.

You see that he says that the mite enters through one or both of the first pair of spiracular orifices and the transference of the mite to the bees would be very easy when they are clearing out the old pollen, would it not?

I have not always found it present and the other day only found broken parts and empty cases instead of the living mite.

England.

AN AMERICAN OPINION

(The above letter was submitted to H. E. Ewing, the leading American authority on the mites, who replies as follows.)

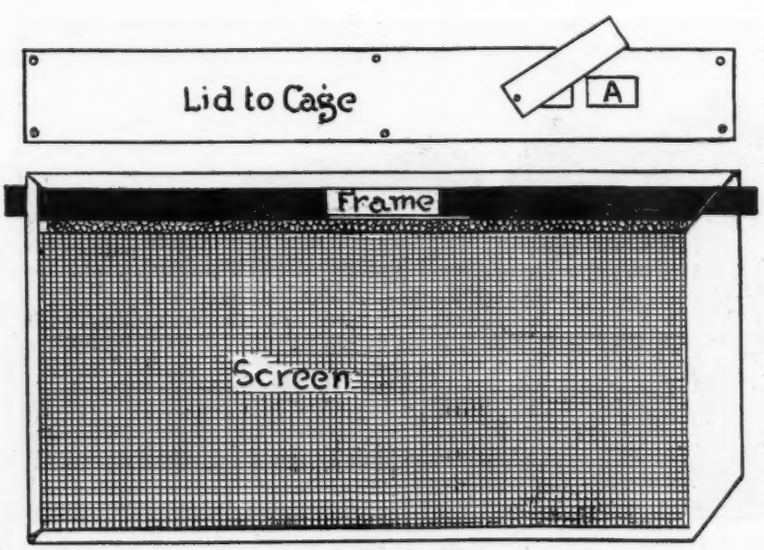
Dear Mr. Pellett:

Your letter of Sept. 15. received, and inquiry in regard to the Tarsonemid of the honey bee noted. I have studied the Tarsonemid mites somewhat for several years and am familiar with the habits of practically all of our described species. They are for the most part plant feeders and suck the juices of plants, causing in some instances the leaves to fade, curl or die. They are quite commonly found about the bloom of flowers but not to the extent that they are found on the leaves. Some of our species are predaceous on other insects and one, **Pediculoides ventricosus,** attacks man, causing a severe dermatitis. This species normally feeds upon a great variety of insects.

In regard to the specific point raised by your English friend, I will state that I do not see any objections to this hypothesis. I have never seen the Tarsonemid of the honey bee and do not know as it has ever been found in this country. I have read with much interest the original papers by Rennie, White and Harvey, as well as the articles in your Bee Journal.

I am of the opinion that much remains to be proven in regard to the biology of the mite at least. These workers are, however, to be congratulated on their very important discovery in regard to the honey bee Tarsonemid.

H. E. Ewing.



A safe introducing cage

THE LEWIS TREATMENT FOR EUROPEAN FOULBROOD

By W. J. Sheppard

With the approval of the Department of Agriculture, the Apiary Inspectors of British Columbia have spent considerable time during the season of 1921 in testing the efficiency of what is known as the Lewis treatment for European foulbrood. Mr. W. H. Lewis, of Edmonds, B. C., who made many experiments in 1920, announced that he believed he had found a new remedy for this disease. Sufficient evidence has been obtained this year to show that if the condi-

tions are favorable, that is, if the weather is warm enough so that the bees are flying freely, the antiseptic used (sodium hypochlorite) may be expected to check the disease sufficiently to enable the bees to clean it up.

The first experiments conducted by the inspectors this year were in the Fraser Valley, during the month of April. The weather then, with the exception of a few days, was wet and cold, and the bees inactive, and the results were not conclusive. Several things were found out at that time, however. The two proprietary antiseptic preparations, containing sodium hypochlorite, that were used, are known and sold as "B1K" (Bacilli-Kil") and "Fecto." The strength of the solution that was first tried was two ounces of B-K, or Fecto, to the imperial gallon of water. This was subsequently increased to four ounces. Mr. Lewis had suggested that it was possibly an advantage to add a little oil to the solution, which was also done. The plan followed was to shake the bees off the combs, which were then sprayed with a fine mist sprayer, so that the liquid would penetrate into each cell. The combs were then replaced in the hives as quickly as possible. It was not long before it was discovered that the solution killed all the eggs, but that the larvæ escaped injury; also, that it did not affect the bees adversely, but, on the other hand, acted as a great stimulus. After the spraying they quickly got to work cleaning up house, and the queens very soon started laying again.

There was considerable re-infection however at that period which, in all probability, was mainly due to the weather being too cold for the bees to fly freely, so that they were hindered in cleaning out the diseased cells and getting rid of any infection that was left. When the experiments were continued later it was found that a solution containing eight ounces of antiseptic to the imperial gallon of water gave better results and the following may be taken as a typical example of what then occurred:

June 1, 1921—Colony at Langley. European foulbrood. Very bad. At least 60 per cent of brood dead. Sprayed eight ounces of B-K to gallon of water, to which four teaspoonfuls of "3 in 1" oil added.

July 2—Colony cleaning up well. No new infection.

July 14—About 5 per cent new infection. Sprayed again, same strength as before.

July 29—100 per cent clean. No trace of European foulbrood. Full of brood from side to side, and storing honey well.

During the time these experiments were being carried out by the apiary inspectors in British Columbia, Mr. Arthur C. Miller, of Providence, R. I., who had had his attention called to the possibilities of the Lewis treatment, made up his mind to give it a trial.

His first report, which was received about the end of May, is as follows:

"One colony I treated with B1K, full strength, and while it killed some brood, they are now as clean as a hound' tooth." (Mr. Miller started off by using B-K at full strength to find out what dilution was necessary tc avoid killing larvæ).

His second report arrived about the middle of June, in which he said:

"I have treated several complete apiaries, and the results are glorious. The virulent type of European foulbrood is worse than the others, or than American foulbrood. Combs with it are simply filthy and big colonies will not touch the job of cleaning up, but after a dose of B-K—what a change. They clean up with feverish haste, and the queen seems to outdo herself in egg production."

Mr. Miller's last report arrived about the middle of August. It is brief and emphatic. Summed up in five words, he says: "The Lewis cure **does** cure."

Mr. Miller states that sodium hypochlorite can be made as follows:

Dissolve two pounds of sal soda in two gallons of hot water, and one pound of chloride of lime in one gallon of cold water. Pour together and allow to settle. The clear solution is ready for use. Once in a while the mixed solutions fail to clear. If so, heat it and it will separate.

British Columbia.

TROUBLES WITH ORCHARD SPRAY IN THE NORTHWEST

By A. E. Burdick

No season ever opened more promising for a good crop of honey than the season nearly over. Early, the hives were full of bees amply supplied with honey, and I was a real optimist; but presto, along comes the codling moth and apple blossom time in Yakima. The orchard becomes enchanted, it is filled with exquisite bloom, sweet and fragrant, divinely planned to attract the bees, who are Cupid's fairies charged with no less a mission than the origin of life itself. "Man has sought out many inventions" and in his desire to destroy the codling moth provides Cupid with poisoned arrows (arsenate of lead) and friend and foe meet the common fate.

This is the price the bee men are paying, that the orchardist may have nice red apples. Along the shores of the Dead Sea, so I am informed, are the "apples of Sodom." They are very fair to look at, but rotten to the core. I have sometimes wished that all the apples that were made possible by my bees, and for whose fruition they gave up their lives, might become as the "apples of Sodom."

Orchardists are now using a cover crop in their orchards. This cover crop is usually alfalfa or vetch, which begins to bloom amout the 15th of June, and from that time on it remains a tangled mass of bloom. About every 10 days to two weeks, during the summer season, the trees, and incidentally the cover crop are given a fresh coat of arsenate of lead. In this way the larvæ of the codling moth as well as the bees are poisoned.

An injustice is being done. Our bees are necessary and are used to make fruitful the orchard and with that accomplished they are destroyed by their beneficiary.

An issue involving fundamental personal rights is at once apparent. Our bees are listed for taxation and thereby become property. No State can justly tax bees as property and withhold protection to the individual owner, to the use and enjoyment of that property.

The issue then is: Is there justification for the destruction of the apiarist's property by the orchardist?

The answer might be in the affirmative if it were necessary for the orchardist to do so in order to protect his property, but fortunately for the apiarist, it is not necessary or advisable to spray an orchard in full bloom, and the cover crop can be cut down before each spray, or some bee repellant, such as " Black Leaf 40," used with the arsenic, and in my opinion it is time the bee men insist on having their rights respected.

The view of the orchardist is illuminating. No Golden Rule involved. Here it is: "Keep your bees at home. They have no business over in my orchard. They are trespassers."

Certain abstruse and perplexing thoughts are thus aroused. Perhaps the status of the bees has not been defined by the laws. Perhaps they are neither wild nor domestic animals; but they are my property, a part of my business, which is recognized as legitimate and as a corollary the habits and activities of the bees are legitimate. If they are trespassers, I am conducting a thieving business and ought to be suppressed. Mr. Orchardist, you have missed nothing, they have not injured the orchard or cover crop; on the contrary they are your best friends. They are a paid-up insurance policy against loss from lack of pollination.

This season a number of orchardists sprayed their orchards while in full bloom and as a consequence bees died by the thousands. My yard was hard hit, but not quite so bad as one of my neighbors.' There is no way to adequately visualize the wreck of an apiary following such a disaster. The unsealed larvæ, nurse bees and queen are potential victims, while outside the hives are clumps and windrows of the dead and dying, with here and there individual bees hopping up, as if to take wing at your approach, only to settle back to the ground, and I am reminded of one of the lines of Burns': "Why startle at me, thy poor- earth-born companion and fellow mortal?"

As I view the graveyard of my hopes and see my mute friends done to death by a slow, corrosive poison, I am led to believe that "Man's inhumanity to man" is only equaled by man's inhumanity to these dumb creatures over which he was given dominion.

An orchardist to whom I suggested that if he permitted the vetch to continue blooming in his orchard he would kill off many bees, replied: "I'll

tell the world that there will be bloom in that orchard on and after the 15th of June." He was brutally frank, entirely revealed himself, and I considered that nothing was to be gained by further talk on that subject. He represents the view of at least a part of the orchardists. But there is another type. They belong to the tribe of Joab. They salute you with: "Is it well with thee, my brother?" But look out for the steel blade concealed in their cloaks.

I am prepared to believe that there is yet a third class, who rejoices when we rejoice, who grieves at our misfortunes, and who is "willing to live and let live," but I have not found it.

Ahead of the apiarist in the Yakima Valley is the sign: "Keep off the grass; your bees have no business dallying with the daisies," and it is up to us either to move on or have our rights defined and recognized by law.

Washington.

SIGN PAINTING

How to Do It

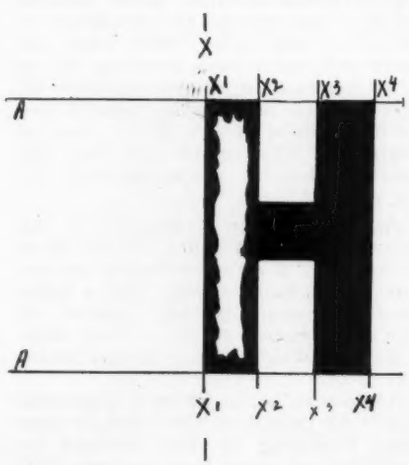
By A. F. Bonney

As a rule, we are told to put up a sign reading "Honey for Sale Here," but the word "Honey" will do in a pinch, if the reader fears to attempt the four words; and supposing this to be the case, I begin:

Get a piece of white pine board a foot wide and 42 inches long, planed, and give it two coats of light colored paint, white pink or cream, drying well between coats. Use a little excess of turpentine so that the paint will dry with a "flat" or dead surface.

When the sign is dry, take a straight-edge as long as the board and, using a lead pencil, draw lines two and a half inches from each edge, marked AAAA in the drawing. Let the lines be very faint. This will give you a space seven inches wide in which to put your letters, and letters of this size will be seen from afar.

Next provide yourself with a strip of thin board one and one-fourth inches wide and about ten inches long, beveled on two edges. This is your letter guide. To use it, measure eight inches from the left hand end of your sign to X1 on the board, place the letter guide to these marks and draw a line on both sides the letter guide, move the guide to the right and make X3 and X4, then make the bar of the letter H.



This is the plain Gothic letter, and is the basis of the many kinds in use. The space between letters is the width of the letter guide, while between words it is one and a half to two times the width of the guide.

In the attached drawing I have made the guide lines very faint and the outlines of the letters dark, for the guide lines will soon disappear.

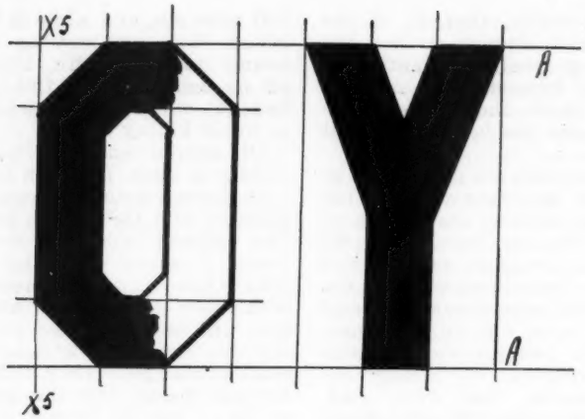
The mixing of paint is a mystery to many people, but is really very simple. For our purpose secure a paper of lamp black, a dime's worth of Japan drier and a pint of raw linseed oil, and putting a heaping tablespoonful of the black in a dish add oil, stirring constantly, until you have a mass as thick as cream, when you add a teaspoonful of the drier. Stir well and the paint is ready to use.

Using a No. 8 sable "pencil," which is a brush, paint very carefully up to the outlines of the letters until you have a strip a quarter of an inch or more wide the shape of the letter, then, with a half-inch brush, fill in the rest of the letters; let dry, and your sign is ready to use. It will be as well for the beginner to let the outlines to dry before filling in, but a hand rest may be made—a sort of a bridge—by using a piece of thin board three inches wide and a foot or more long. On one side of this, across both ends, fasten thin strips of wood, and it is ready to use.

Leave the sign stand until it is dry, then put it up, and as simple as it is, it will attract a deal of attention. If a larger sign is desired, all there is to do is to widen the letter guide and the sign board in proportion. If, for instance, you want to make a sign with letters a foot high, use a board about five feet long and eighteen inches wide, made of white pine flooring, cleated together with strips on the back, and make a letter guide two inches wide, which will make a sign that may be read a long distance.

A person may, of course, use bright colored paints in making signs, but to my notion there is nothing better than a neat black and white sign.

Iowa.



MOVING BEES SHORT DISTANCES

On page 366, September Journal, "New Hampshire" asks for a method of moving bees without loss. Langstroth Revised, page 308, latter part of paragraph 572, gives the best method I ever heard of: Moving the strongest colonies first, letting the bees that return strengthen the weaker colonies, moving the weakest last, thus equalizing their strength and moving them without loss.

I think this plan so good that it ought to be published three or four times a year until beekeepers are as familiar with it as they are with the Demaree system, clipping queens or any other manipulation.

In moving a single colony a short distance, a good plan is to place on the old stand a hive with a comb in it, one with a little brood in it, if possible; leave it for two or three days, as all the old bees do not return the first day; then, at night, place the hive on top of the colony where they belong and let them unite through a newspaper or bee escape. They will stay "put." E. M. Cole.

Iowa.

(The only objection to that method is the number of trips necessary to move all the colonies. But, it will work well in an instance such as is mentioned on page 366. This scheme was suggested by Mr. Langstroth, who wrote, in his first edition of the "Hive and Honey Bee:

"Selecting a pleasant day, I moved, early in the morning, a portion of my very best stocks. A considerable number of bees from these colonies returned in the course of the day to the familiar spot. After flying about for some time, in search of their hives (if the weather had been chilly many of them would have perished) they at length entered those standing next to their old homes. More of the strongest were removed on the next pleasant day; and this process was repeated till at last only one hive was left in the old apiary. This was then removed, and only a few bees returned to the old spot. I thus lost no more bees in moving a number of hives than I should have lost in moving one; and I conducted the process so as to strengthen some of my feeble stocks, instead of very seriously diminishing their scanty numbers."

We thank Mr. Cole for recalling this to us. This should not prevent the apiarist from using a slanting board in front of each hive moved, as it calls their attention to the change of location.—Editor.)

HE LIKES SESAMUM

A. W. Puett, of Jones County, Texas, writes an enthusiastic letter about the sesamum, after having planted the sample package of seed sent out by the American Bee Journal last spring. He planted the seed on April 28, the same day he planted his cotton. Part of the seed was planted on what he calls "raw hide" land, and the balance on good sandy land. It succeeded about equally well on both kinds of soil, except that he had a larger number of plants on the sandy land.

Under date of September 5 he writes as follows:

"I counted as high as 231 pods of seed on one plant. Sixty days after planting it began blooming and continued to bloom for 60 days, when it died, apparently from dry weather. It only had one good rain the whole season. Several times during the season I found the bees working on it. I don't know of anything that produces as much seed to the stalk as sesamum and I believe it will prove to be among the greatest bee plants ever introduced into this country. I secured a half gallon of seed from 40 stalks and am well pleased with it, considering the season.

When the stalk begins to turn yellow and a few seed pods are opening, cut the stalk below the lowest branch and place upside down in a large sack, barrel or tight box. In four or five days all the pods will open, and by shaking the stalk all the seed is threshed out clean, and with little work."

THE HYBRID VS. ITALIAN

By Claron D. Barber

Mr. Prothero's ideal bee is certainly an admirable goal to strive for. However, I doubt very much if the ideal bee, or the nearest thing to it that will be evolved will be a hybrid. Attempts at improvement by cross-breeding along this line have not proved singularly successful in the past, no less a celebrated practical beekeeper and student of bee nature than the late Dr. C. C. Miller gave up hybrids after years of use, during which he constantly strove to improve his stock by selective breeding. A lack of fixity of character, even after a so-called strain has been established, is their glaring and omnipresent fault. Also I question the possibility of any hybrid strain possessing the uniform foulbrood resistant qualities of a good strain of Italians, a quality which, going hand in hand as it does with colony strength and honey production, is something sought after above all other qualities.

In live stock or similar lines we find no attempts at improvement by hybridizing; why should something that has been given up along these lines work out in bee culture? I would suggest that the qualities Mr. Prothero would give to the Italian by the addition of foreign blood should rather be bred for selection in a pure strain of Italians. It is my opinion that this, when the difficulty of obtaining the desirable characteristics of a race in its crosses and other obstacles are taken into consideration, should prove the easier of the two. Then, when we did obtain the strain, we would have it for all time, something we would not be sure of with blacks. Perhaps it were best to stick to the old reliable three-banders, who have proved themselves the best for general use by many years of trial.

Illinois.

BEEKEEPERS BY THE WAY

Well-Known New Yorker

In the State of New York there are a number of well-known beemen, but none more fascinated with the pursuit of honey production than George B. Howe, of Sacket's Harbor. Howe is one of the well-known queen breeders of the eastern section, and there are few who are able to secure queens of such uniformly high quality as he. He selects for a breeder the queen at the head of a colony which has not swarmed and which produces the largest amount of honey. In this way he is building up a strain of heavy producing bees. At the same time the other qualities, such as gentleness and color are not overlooked. Howe believes that by giving the same careful attention to breeding bees which has been devoted to poultry, cattle, hogs and sheep, that equal results can be obtained.

George B. Howe

BOTTOM STARTERS

By C. E. Fowler

In the July issue, page 280, Mr. Greiner speaks about drone comb. He says:

"Yet we have to cull out many otherwise nice combs on account of the foundation having sagged to an extent to make them for all practical purposes drone comb."

When I used starters (for economy) I made a big mistake, but that was years ago; since I use full sheets I have had better luck, and I never have any drone comb from stretched foundation.

Either his wiring was wrong or his foundation was too light.

He says: "We cannot keep our extracting supers as free from drone comb as our brood chambers." I always use full sheets of foundation and bottom starters in the supers, and never have any drone comb whatever; unless the mice make a hole first, which happens sometimes.

For years the comb-honey producers used starters. triangles, and short foundation, but they found the full sheet and bottom starter a great advantage and now many use them.

A few years ago I found out the bottom starters on frames were far superior in many ways to single sheets.

My bees always fasten the comb to the bottom bar before they put much honey in; that is, they connect the sheet to the bottom starter and fill the frame entirely full of worker comb, frequently not leaving room for a single drone cell.

The bottom starter gives about 5 per cent more room for honey, so that 19 supers will hold as much honey or brood as 20 supers without bottom starters, and pays for the trouble about once every year, 100 per cent.

New Jersey.

BLACKHAWK COUNTY, IOWA

The Blackhawk County, Iowa, Beekeepers' Association was organized the evening of July 29, 1921. The following officers were elected to serve until the regular annual meeting in October: President, M. M. Moore, Waterloo; Vice President, M. W. Oman, Waterloo; Secretary, Amos Burhans, Waterloo. The Executive Committee, which includes the three officers mentioned, is also strengthened by the addition of two other members, namely, H. S. Hayes, Cedar Falls, and Roland Nutt, Waterloo. They plan to hold a field meeting, with the assistance of Mr. Newman Lyle, of the Extension Department of the Ames Agricultural College, as demonstrator, in September.

The objects of the association are to promote good beekeeping, to assist in the eradication of bee diseases in its territory, to foster the interests of its commercial honey producers, to enlarge its honey market, to hold an annual field meet within its district, and to co-operate with the State and National Beekeepers' Associations.

SOME BEE PHOTOGRAPHS

By F. Dundas Todd

Wm. Wilson's apiary in Kent, England

The first picture is a view of part of my own apiary as it looked in the beginning of July, 1920, when it was all set for the honey crop that never came. It shows the transformation complete from a system when only shallow bodies were used to the modified Dadant. With poor seasons it has been quite a task to get the new combs built, but the work is over and I am glad I made the change. All through a dozen years I have had but one thought, the avoidance of heavy lifting; hence the adoption of the shallow body. But I found I had very many medium lifts, so I tried a few modified Dadants, always wondering what Mr. Dadant meant when he said in answer to one of my remarks about the heavy lifts, "Why lift a Dadant hive?" Now that I have had as high as forty-two going at one time, my only regret is that I did not start with these hives, as they are the easiest worked of any I have tried, and one lifts a brood chamber but seldom.

Seeing we have much rain in winter and spring, and that our nights are invariably cool in summer, I have retained the principle of the cap, but have detached it from the roof, in other words, I have risers to enclose the supers, as is the fashion with British beemen.

Each riser is the depth of an ordinary hive. In winter one is occupied by a sack of dry leaves, and that is about all the preparations I make for winter, but since that pillow of moss is used all the year round, the minute the supers are removed the sack is just naturally placed in position, and packing is all done, provided there are enough stores in the brood chamber. So that part is easy, much easier than with my old plan of cases filled with packing. I have room for eleven Jumbo frames with inch-and-a-half spacing in the brood chamber. When I cut down the number I fill in with enough three-quarter inch followers, usually four, hence the side walls are more than two inches thick, the back is an inch and a half, and the front is three-quarters of an inch.

Each super contains 9 or 10 ordinary shallow frames in a space that will hold 12 if crowded, a capacity of at least 45 pounds of honey. Two risers still protect three supers, but I use only two, then the pillow of moss above. In spring the only unpacking is to remove the sack of moss, which takes but a moment, and the frames are available for examination. Until the first of July I have but the one story, the brood chamber; after that I handle supers, and there my heaviest lift is about 50 pounds. It is by far the simplest beekeeping system I ever tried, so I am content.

The tallest hive in the row deserves special notice, as it is my first attempt at running a twin hive, that is, one with two queens side by side, with only a wire netting between. I have had this kind of thing on my mind for over a dozen years, but could not get interested in the idea of trying to run a hive at least 28 inches wide, that is to say, twice the width of an eight-frame hive, then a second story of like dimensions to complete the brood chamber in May, followed by supers of the same size. Even limiting each queen to 12 combs meant a front of not less than 21 inches, all odd-sized dimensions. Last winter it struck me the Dadant hive was just ideal for the venture, as 10 Jumbo frames would be about right, these in two stories. So I made the center partitions of double mosquito netting, separated by a framework of three-eighths inch wood. The second story is made of two supers nailed together, and also has a partition like the one below. Above is a queen excluder, then the super, which has no partition, so the bees have the space in common.

So far I have had no success with the three double colonies I started; they were no better and no worse than the other colonies in the yard. The queens were all young and from a good breeder, but the start was made after our spring flow was over, and no colony could possibly build up in the dearth that followed. One beeman in the city of Victoria tried one a year ago, getting from it a crop that easily excelled the total of 8 other colonies in the yard, and that is almost all I can say about the system thus far.

I am going to modify it a little bit in 1922 by separating the second story of the brood chamber into parts, perpendicularly, so that I can work one side entirely without disturbing the other; besides, I will have less weight to lift. These half bodies have ends of ordinary thickness, but the walls are only of half-inch board, this being necessary to get them inside the risers. Incidentally, these half bodies will do nicely for queen mating as well.

In all of these double hives I noticed one feature worth mentioning—the tendency of the bees to gather to one side, the west one, in all cases, when the partition was put in. When supers were put on I expected the bees would cross over to the other side quite frequently and so equalize the colonies, but I could never see that they ever did so. Maybe if the population had become very strong

Todd's apiary in Modified Dadant hives

such movement might have happened, but the numbers never got to boiling strength. I am trying to winter them as they are, and hoping for better results next season.

A Scotch beekeeper near London kindly sends me a photograph of his apiary, and this I send to the editor, as I think many would like to see how Britons run their yards. The risers I have spoken of are in evidence on these hives, but my venture in this direction was no imitation of the British system of beekeeping, it was merely the logical outcome of the experiments in wintering I have been making for years. Similar climatic conditions produced like results. It was only after I had reached my final conclusions that I realized I had adopted the British principle.

Mr. Wilson for several years has discarded the beekeeping system of his native land and followed that of British Columbia with much advantage, he says. The idea of the British beekeeper is to take all the honey in the fall, and winter on sugar. In spring sugar is fed steadily. These beekeepers think they are doing well if they have 10 of their frames, with an available brood space of 1,800 square inches covered with bees at the beginning of the honey flow. In British Columbia we want at least 10 solid frames of brood, over 3,000 square inches, which means we have at least 20 frames packed with bees. I have often seen 14 frames of solid brood, and 30 frames solid with bees as early as the end of May. To my mind it is largely a question of winter stores. Whenever we get a man to the point where he will leave a solid second story of honey for the winter, We feel a new beekeeper is born; but how few will surrender immediate gain for future profit? Mr. Wilson, adopting our system, says he gets powerful colonies, and when seasons are good he secures big crops; but alas for human skill, in his present location, with thousands of acres of white clover and sainfoin around him, he has not got a crop of any kind from 100 colonies for four years. Withering drought or steady rain has been his lot when honey flow time came.

British Columbia.

BEES ON WILD CARROT

The wild carrot, commonly called Queen Anne's Lace, or bird's nest plant, is a common weed in fields and waste places throughout the eastern states. In places in New York and New England it is so common in fields that one sometimes mistakes it for a buckwheat field at first glance.

Chas. F. Hoser writes that he has been a beekeeper in the vicinity of Philadelphia, Pa., for 24 years and never until this year has wild carrot been of any value to the bees in his vicinity. During 1921 the bees have worked it freely and apparently have secured considerable nectar.

Eastern beekeepers only report bees working on it occasionally, so it is evident that it is seldom of much importance in the east. In the west where the cultivated carrot is grown for seed, it is said to be a valuable source of nectar.

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

Queen Cells

I received a two-frame nucleus on the 5th of August, with an untested queen introduced. In about ten days the bees started queen cells and have completed six up to date; the first three have been removed. The bees are in an eight-frame hive and are working good, and the queen seems to be a good layer; she lays an egg in every cell that is empty, once in a while two in a cell. Should these queen cells all be removed, and why are they building them. NEBRASKA.

Answer.—It happens quite often, when bees are shipped, that the queen becomes fatigued from the journey and is not in good trim to lay eggs for quite a while. When the bees notice this, they may start queen-cells with the intention of superseding her. But, often also, as in your case, the queen gets rested and begins to lay actively. Then the bees cease their superseding preparations. The fact that your queen sometimes lays two eggs in one cell shows either that she is still inexperienced, or that she is producing eggs faster than she can find empty cells in which to place them.

Robbers—Goldens

1. I have a colony of Italians that have a few peculiar looking bees. They have a shiny, pure black, wasp-like appearance. When I say pure black I mean the head, thorax and abdomen are black, except that they show three yellow bands. They have no fine hair or fuzz on their thorax or abdomen. The other bees are continually pulling them out of the hive. The queen is a young Italian that I received from a queen breeder this spring. What is the trouble?

Why are golden Italians irritable?

2. On page 26 in Frank C. Pellett's book, "Practical Queen Rearing," he says: "While it is quite true that some strains of Goldens are not desirable, being neither hardy nor good honey gatherers, there are strains where proper attention has been given to other points, which are very satisfactory. CALIFORNIA.

Answers.—1. The black, shiny bees, which have lost all their hairs are usually robber bees, who are shiny because of lurking about corners and trying to steal honey anywhere except in the blossoms. We can hardly blame them, for, often, those bees are rendered dishonest by the opportunities which have been offered them in exposing honey where they could get at it. If they are mishandled or ill-treated, it may be that they are in a hive to which they do not belong, or that by pilfering they have acquired a foreign odor; or perhaps they are so worn as to be considered as of no value in the hive.

2. The irritable golden bees, high tempered and restless, are usually secured from a cross with Cyprian drones. The ugly disposition of the Cyprian seems to remain in the race a long time, with the bright color. The gentle goldens are from continuous selection of bright colored Italian bees and queens. We do not know who is a breeder of these strains, but if you wish to get gentle goldens, ask the question of the breeder from whom you propose to order. Tell him you want peaceable bees.

Wintering—Moths, Etc.

1. Last fall I had a late swarm of bees which did not make enough honey to winter. I gave them sugar and water in a super. They took down about a quart of this and had sugar candy in the super. When the honey was all gone, February 15, they all died. Please advise how to keep a light swarm, for I have two or three for this winter.

2. What is a good thing to kill bee moths and keep them away from bees?

3. I have in an old hive of bees about 125 pounds of honey; the bees did not swarm. Was it because they had so much room?

4. Please advise a good way to get a swarm of bees out of a stone house without tearing it down. The bees have been there at least two years.

5. I had an old hive of bees which, when heavy enough, built about five or six queen cells. About a week after I cut them all out but two. Then I took the old queen and one drone and half the bees and put them in a new hive in the place of the old hive, and moved the old hive quite a distance away. A lot of the bees went to the new hive. The old hive did not make enough to winter; I rather doubt if they will live through the winter. Did I swarm them wrong? NEW YORK.

Answers.—1. To keep sugar syrup from crystallizing, add about 10 per cent of honey to the syrup. Don't give them less than 25 pounds.

2. A good thing to keep moths away from the hives is to have none but strong colonies. Moths cannot damage healthy, strong colonies. Italians are better than blacks in this respect.

3. Of course it was.

4. The only way is to take out the wood wainscoat on the inside, to get to the bees. Otherwise you can only kill them by pouring bi-sulphide of carbon into their opening and closing the holes; bi-sulphide is inflammable, so do not bring a light near.

5. This might have been all right if the season had been very good, but you took too much away from the old hive. As to the *one* drone, there was no need of him. You need to read a good text book on bees.

Partnership

A and B go into the bee business. A furnishes 50 per cent of the purchase price of bees and equipment, a honey house and an apiary site; B half the capital and does all the work. What would be a proper division of the profits? Also if B furnished only one-seventh of the capital. CALIFORNIA.

Answer.—It has always been our understanding that the labor put upon an apiary equals the interest of the money and wear and tear of the capital. So, we figure about half and half, if one man furnishes all the investment and the other all the work. From that we would conclude that the man who did the work and furnished half the capital should receive about three-fourths of the income. We also figure that the man who furnishes the apiary site and the bee house and watches the possible happenings is entitled to one-tenth of the crop. But these matters must depend somewhat on conditions, location, expenses, labor required, etc. So it would be difficult to pass on this without knowing all the circumstances. There is also a difference in opinions on the matter, according to the greater or less experience of the man who does the work and the greater or less cost of the bees and equipment. Much of

it must be adjusted by the parties themselves, without regard to other people's ideas.

Requeening

1. I have been having some trouble in getting a hybrid colony of bees to accept an Italian queen. I tried removing the old queen and introducing the Italian simultaneously.

Would it be more sure to remove the old queen, say 6 or 8 days prior to the introduction of the new one, and remove all queen-cells?

2. Would the bees be hopelessly lost after 8 days without fresh brood or queen?

3. Do you think peppermint is practical in the introduction of queens or uniting hostile colonies, as discussed on page 359 of the September Bee Journal. MISSOURI

Answers.—1. No; the removal of the old queen immediately previous to introducing the new one is generally considered as the safest. You might try to place the old queen in a cage for an hour or so before introducing the other in her place in that same cage. That gives the cage the odor of the old queen and helps some. Then put the introducing cage in a central place between two combs of brood, and do not release the new queen until she has been in the hive 48 hours. After releasing her, be sure to leave them alone for a few days, until they get fully acquainted with her.

2. Being 8 days or more without either brood or queen might induce some drone-laying workers to lay eggs. Then the introduction of the queen would be just that much more doubtful.

3. Peppermint or other strong smelling drugs would help in introduction. The only danger is in the use of such drugs in sweetened water. This attracts the robbers, and there is always more danger of a queen being killed when robbers are about. For that reason, we have never used such methods to any extent.

Care of Queens

A neighbor brought me some queens which had been given to him. I thought it risky to introduce them at this time of year and never heard of it being done, so I put the queens confined in the cages above the cluster in the hives. Will the bees take care of them there, and for how long? Will they live till spring confined in this way, and will they be any good after being shut up so long, or will it do to introduce them now, if we get a warm day? At what temperature can it be done? I do not like to take too much risk at this and have a queenless colony. TENNESSEE.

Answer.—You certainly have me cornered, for I must reply, as Dr. Miller so often did: I don't know. I have kept queens quite a while over the brood nest in the warmest part of the hive. But I have never tried to winter them there. I believe, however, that the bees will take care of them as long as they have their cluster close enough to keep them warm.

A warm day when the bees fly might be all right to kill an old queen and introduce a new one. But here, also, I have to acknowledge that "I don't know." A day when the temperature is about 65 degrees ought to be warm enough to open the hives.

If you try all this, you will have some experience worth while, and I would be glad to hear how you succeeded.

Late Feeding—Frame Spacing

1. Would it be safe to feed a colony of bees, short in stores, sugar syrup this late in the season, and would you feed it at the entrance? Do you suppose this would start the queen to laying, and, if so, would the young brood perish during the winter? The hive is an old gum made out of 2-inch material.

2. If you were buying new hives, would you get the 1⅜ inch spacing or the 1½ inch? Which, in your opinion, is the better? MISSOURI.

Answers.—1. It is rather late to feed liquid food to a colony in November. Better give them sugar candy. To make candy, add water to sugar and boil slowly till most of the water is evaporated. Stir constantly, so it will not burn. To know when it is done, drop a little into cold water; it should become brittle at once. Pour it into pans to make cakes about an inch thick. With a box hive, it will probably be necessary to cut a hole in the top, large enough to reach t e cluster with your candy. Don't give it to them at the entrance, as it will be found by robbers as quickly as it will be found by the bees of the hive. In the cellar, one can turn the box hive bottom up and put the candy right on the combs. The queens will not be likely to be induced to lay, by the use of candy.

2. I much prefer the 1½ inch spacing.

Temper

I have a stand of bees with a young queen in my yard that for some reason are extremely hard to handle, fighting and stinging upon the slightest provocation, and frequently attacking me while working with other stands near by. This hive was started in the spring with a ripe queen-cell taken from a colony of pure bred Italians, and until lately gave no trouble. As far as I can tell, the young queen, in mating, met an Italian drone, as the bees do not show any indication of being mixed, but show all the marks of the pure Italian. They are in a ten-frame cedar hive and cover nine frames with stores and brood nest.

Can you tell me of any reason why they should get the disposition of a hornet?

The other bees in my yard are pure Italian and have always been gentle and easy to handle. OREGON.

Answer.—No, I cannot see any reason for the behavior of those bees, if they are pure Italian and bred from quiet Italians. Some of the Golden Italians are of that color and temper, because they have been bred with a mixture of Cyprian blood, from some remote mating at the time when Cyprians were in vogue. But if your other bees—and especially the ones from which this queen was bred—are of gentle disposition, I can only surmise that the ill-disposition is a return to some ancestral type or what is called "atavism."

But wait, there may be another reason. The hive in question may have been disturbed by mischievous boys. I have seen colonies become very irritable when ill-treated.

In either case, I see but one remedy. Change the queen at the first opportunity, unless their behavior changes.

Transferring—Bee Pasture

1. I have 15 colonies of bees in eight and ten-frame hives, but the combs are built crosswise, so it is impossible to move them. I wish to transfer them to ten-frame hives with full sheets of foundation. When is the best time?

2. What number of colonies can be kept in a locality where there are about 100 tulip trees, 20 acres of alsike clover and about 40 acres of buckwheat within one-half mile of the bees. PENNSYLVANIA.

Answers.—1. The best time to transfer bees is at the time of fruit bloom in spring. We do not advise transferring late in the fall.

2. If there are 100 tulip trees, 20 acres of alsike clover and 40 acres of buckwheat inside of a half mile, there would probably be ten times that amount inside of two miles. In that case you could keep 80 to 100 colonies there. Bees can go much farther than a half mile after honey. Of course, the amount of honey to expect from a radius of two miles is all guess work and never the same, for much depends upon the weather.

Syrup for Feed

Would you kindly let me know how to prepare a syrup for wintering bees? WISCONSIN.

Answer.—Melt 10 pounds of good sugar with 5 pounds of water, and when dissolved add 1½ pounds of honey of such quality as you are sure of. Unknown honey might bring germs of foulbrood. Put into friction-top cans, the lids of which are pierced with a number of very small holes, and invert on the hives to be fed.

You may also feed your bees by laying over the tops of the frames cakes of candy made in the way that "fudge" is made for the children This is for emergency. Syrup is better.

Do not feed either corn syrup or molasses. They would kill your bees, in winter.

Queenless Colony

1. I have one swarm of bees that was queenless for 30 days o more and had no fresh eggs during that time. I went to give them a queen and there was a nice young queen that had just begun to lay. Could a mating queen have made a mistake and got into the hive? I missed one in a hive about 8 feet from there.

2. How will I fix my bees? There are so many bees I don't think one hive will hold them all. Would a super do on top or underneath? NEBRASKA.

Answers.—1. Yes, it is possible that a young queen would make a mistake of that distance, especially if there was a row of hives, all alike in color and shape. There is another possibility, however, and that is that there may have been a little brood from the previous queen, which you did not notice, and that the bees reared a queen themselves.

2. We do not believe there will be any difficulty in your bees all getting into the brood-chamber where they were hatched. When the weather turns cold, you will find that they will shrink the volume of the cluster a great deal, because they will hang closer together. However, if there is not enough room for them, I would place an empty super or body under the brood chamber. Perhaps it might be well to give them another body with honey in it. In that case, better put it at the top.

Unripe Honey

1. What is meant by "unripe honey?"

2. Is unsealed honey unripe honey?

3. Can unripe honey be preserved without change?

4. Is the crop greater when honey is unripe? What per cent?

5. Do they sell instruments to test honey and find whether it is ripe or not? What are they called, and where can we buy them?

6. Will honey ripen in tanks without heating?

7 By what process can we keep honey from granulating? CANADA.

Answers.—1. Unripe honey is nectar harvested by the bees which has not been sufficiently evaporated. Instead of flowing like thick molasses or maple syrup, it flows somewhat like water. Ripe honey weighs about 12 pounds to the gallon. Water weighs about 7 pounds. Unripe honey may weigh anywhere between these two weights.

2. Unsealed honey may be ripe, if it has been in the hive a numbe of days and the bees have worked to evaporate it by fanning the hive. The heat also helps to ripen it. Sealed honey may be more or less unripe, if the bees have sealed it too soon, during a heavy honey flow. It may then burst the cappings. Usually, however, sealed honey is ripe.

3. No, unripe honey will not keep. Its fermentation, more or less rapid, depends upon the temperature.

4. The nectar of blossoms, when harvested by the bees, sometimes contains as much as 75 per cent of water. Sometimes it is so thick that

it cannot be extracted. This is often the case with heather honey. Watery honey usually loses 25 or more per cent of its water during the first 24 hours, if the weather is warm and the colony powerful. The bees evaporate it by forcing a strong current of air through the hive. It often takes several days to ripen honey to proper consistency.

5. They sell instruments, which are called "hygrometers" to test the density of liquids, whether they are heavier than water, as is honey, or lighter than water, as is alcohol. These hygrometers may be bought from druggists in cities.

6. Honey is ripened considerably in tanks in hot, dry weather. But it is better not to extract it till it is fairly well ripened. This is a matter of locality What may be done in a warm country, like California or Texas, may not do at all in Canada. At any rate, it is always well to keep honey in a warm, dry room, so it may evaporate. Damp places are bad, because instead of evaporating, it gets more moisture and ferments.

7 Honey may be kept from granulating or may be melted when granulated, by heating it over water "au bain-marie." It should not be heated to over 165 degrees. It always loses some of the volatile essential oils which give the fine flavor and which are distilled by the flowers in the fields.

Bees and Grapes

A beekeeper and horticulturist in this community are having trouble. The beekeeper has 60 colonies of bees on another man's farm. One of the neighbors of this man has an orchard and vineyard. The bees went into this vineyard and sucked the juice ut of his grapes. He expected to obtain four tons of grapes, but claims that the bees destroyed two tons, having punctured the grapes, bursted them, etc. He claims damages.

1. Do bees puncture grapes? Give evidence from beekeepers and horticulturists if you can.
2. Do birds injure grapes by picking them? If so, what is the shape of the puncture that the bird makes in the grape?
3. Has this question of damages been settled in the higher courts of the country?
4. Does the bee do more injury to the horticulturist than good?
5. Can the horticulturist claim damages legally or morally from the beekeeper?
6. If the horticulturist notifies the beekeeper after the claimed depredation is almost complete, and the beekeeper agrees to furnish pickers the very next day, free of charge, and the horticulturist does not accept the proposition, what would be justice according to law towards both parties?
7. Do bees ever store away fruit juices in the hives? If so, does it injure the bees in winter, whether in the cellar or out-of-doors?

The conditions in this community, it might be well to say, so far as weather conditions are concerned, were as follows:

The summer was hot and dry until about three weeks before grapes were being picked; then came the rainy season; the grapes maturing much earlier than usual in this section, were over ripe, all of which the beekeeper claims caused them to burst on the vines. What can you say as to the bursting of grapes under such conditions? The frost in the spring destroyed most of the grapes in this vicinity, so that the crop is far from normal. This horticulturist's crop of grapes last year was about eleven tons, and his four tons for this season's crop is only an estimate on his part.

MICHIGAN.

Answers.—1. Bees do not, cannot, puncture sound grapes. Any one may try this by inserting a bunch of ripe grapes into a bee hive and removing it in 24 to 48 hours. Puncture one or two berries first, as a test.

2. Yes, birds pick at grapes. When very hungry they will almost destroy the berry, but when their maw is full they often pick at the bunches for pleasure. Then they usually make two holes in each berry, one above the other, with the two points of the beak.

3. No, no one, to our knowledge ever sued a beekeeper. If they did it they would be sure to lose.

4. The bee does more good than injury to horticulture, for there would be no fruit if the insects like the bees did not visit the flowers. This, also, may be tested easily, by enclosing apple buds under a gauze.

5. Not if the judge or jury takes evidence of sufficient extent.

6. Let that be decided by the courts, if it is worth trying.

7. Yes; bees store fermenting fruit juices in the hives when they are short of good honey, and those juices make them sick. We know that by our own experience.

If you wish additional statements concerning the question of bees and fruits, we refer you to the September number of the American Bee Journal, "Question and Answers," page 368; also to "The Hive & Honey Bee," paragraphs 871 to 878, inclusive. This matter has been often debated and the answers are just as plain as the fact that the earth moves around the sun and not the sun around the earth.

ODDS AND ENDS

Colorado Short Courses

Colorado is to have two short courses in beekeeping conducted by the College of Agriculture in cooperation with the United States Department of Agriculture. The first of these is to be held at Fort Collins, during the week of November 21-27, and the other at Grand Junction, on the following week. Although the program is not quite completed, the instructors scheduled for these two schools are: Dr. E. F. Phillips, Apiculturist, U. S. Department of Agriculture; Geo. S. Demuth, editor of Gleanings in Bee Culture; Dr. C. P. Gillette, Colorado Agricultural College; E. W. Atkins, of the G. B. Lewis Company, Watertown, Wis.; C. H. Wolfe, Vice President of the Colorado Honey Producers' Association; Newton Boggs, State Apiary Inspector; Dr. W. R. Calkins, Cortez, and J. D. Caldwell, Rifle, Colo.

Newton Boggs,
Deputy Bee Inspector.

Big Crops From Big Hives

I make this observation on the year's work. Every Dadant hive run for surplus gave me upwards of 140 pounds, except one which swarmed and one which was an unfilled nucleus when clover came on. Out of four Langstroth hives run for surplus, the best I got was 82 pounds, and down to 56. My Dadants were 228, 196 and 148 pounds. I lay this to the fact that with so much more honey in sight in the big hives, early breeding went right along, while with less reserve in the Langstroth hives probably held back early breeding.

Elmer T. Beach.

A Good Report From Indiana

I got 2,440 sections of nice clover honey and the bees are all in good shape for winter from buckwheat and goldenrod honey. All have 50 pounds of surplus in the brood chamber. This was taken from 16 colonies, spring count, and an increase of 100 per cent.

Two of my best colonies made each 176 sections, the next best were 8 colonies with 168 sections each. I am certain that they would have produced more if I had only put on more sections. The fall flow was never so good. Frank Langohr.

Honey Bees and Honey Plants

The average United States yield of surplus honey per colony to September 1, this year, is estimated at 40.5 pounds, which is about the average yield to that date, but only 78 per cent of the yield at the same date last year. The number of colonies is greater than last year, however, being estimated at 107.4 per cent, so that the indicated total production of honey to September 1, this year, is about 84 per cent as great as last year's yield. H. C. Taylor,
Chief of Bureau of Crop Estimates.

Honey Imports for 12 Months

The total honey imports from foreign countries to the United States for the year ending June 30 were 452,983 gallons, or over five million pounds. No wonder we have been affected by the influx of honey. This does not include, either, the large amount of honey coming in from Porto Rico and Hawaii.

Countries sending us the most are as follows:

Dominican Republic	107,901 gallons
Cuba	99,845 gallons
England	69,217 gallons
Mexico	35,295 gallons
Chile	34,678 gallons

These figures are taken from the Report No. 80 of the Bureau of Markets.

England and many other countries listed as exporters of honey, do not likely produce any of this honey themselves, but act as merchants as between the point of production and the United States.

Texas Gets Wet

Texas has the reputation of doing things right, but in the matter of water they have recently overdone it somewhat. Our readers will be glad to note that the Texas Honey Producers' Association emerged from the recent flood at San Antonio with but a small loss to their goods. There was four feet of water in the warehouse where their honey and bee supplies were stored and it required a large amount of labor to get all the "water out of their stock." Since tons of honey were under water every can had to be examined to make sure it had not leaked, and the wooden goods required moving to a place where it could be promptly dried out.

Government Honey Report

The Monthly Crop Reporter for September 1 shows the average honey crop of the United States as 40.5 pounds per colony as against 51.9 last

year, and a five-year average of 40.4 pounds. Condition of honey plants is only 77 per cent as against 85.8 per cent for last year, and condition of colonies is given as 87 per cent, as against 90 per cent in 1920.

C. A. Hatch Dies

Word has recently reached this office of the death of C. A. Hatch, of Richland Center, Wis., a well-known beekeeper of that State. Mr. Hatch has been in failing health for some time past. He passed away on September 19.

California Short Courses

Two short courses in beekeeping will be offered by the University of California this winter. The first at Berkeley, from December 5 to 10, is intended primarily for beginners. The advanced course will be given at the same place from December 12 to 17. An extension school will also be held at Los Angeles from December 5 to 10.

These courses are under direction of Prof. G. A. Coleman, and those interested should address him at the University, Berkeley, Calif., for complete program.

Co-operation Needed

We need an extensive educational campaign in the interest of American beekeepers and the extracted honey producer especially. In our exhibiting we met with distressing circumstances. A contention exists between the beekeepers in a locality, through the poor policy of some of cutting the prices below what it is actually worth to undersell their neighbors. I was told of one man who sold his honey at 65 cents for a 5-lb. pail. How is that for a fair price for Michigan white clover? I live in hopes that some time soon we may have better control of the retail trade and the small producer.

Roland Adams.

Michigan.

Why Not "Bee Jelly?"

The three-year-old son of a friend was having his first taste of honey, and his mother explained how honey was produced, and showed him a bee gathering honey on a blossom.

The next day the boy wanted more honey, but forgot the name for it. What more natural than that he should ask for "bee jelly?" Just yesterday he was heard trying to explain why a bumblebee was not a "jelly-bee."

Perhaps those people who are anxious to rid our vocabulary of the term "extracted honey" as a misnomer, would be willing to compromise on "bee jelly."

Apple Trade

Recent reports would indicate that the apple trade has slackened up owing to advances in prices made by handlers. "The Packer," of Kansas City, says:

The keen edge seemed to have disappeared from the active apple market of last week, due in a large measure to the high prices prevailing. Some receivers were asking as high as $12 a barrel for high-colored, good-sized fruit on Monday of this week, fruit that sold the preceding week for $9. Demand was moderate Monday and average Wealthies and Snows sold from $5 to $7. Gravensteins brought $8 and $9 and McIntosh Reds from $9 to $10 on the best and $7 and $8.50 on unclassified. Crab apples have been in very light receipt and have sold from $8 to $10. Washington boxes of McIntosh Reds, orchard run, medium and large sizes, have sold at $4 to $4.50, small sizes at $3.50 and No. 1 McIntosh Reds from Maine at $3.50 to $4.

Trying for Lower Freight Rates

The International Apple Shippers' Association, the National League of Commission Merchants and the Western Fruit Jobbers' Association of America, co-operating, are gathering facts on the effects of high freight and express rates on the fruit and vegetable industry.

This information, when tabulated, is to be presented to the Joint Commission of Agricultural Inquiry of Congress and to the Interstate Commerce Commission in an effort to have rates reduced to a workable basis.

It is promised that this is the most exhaustive survey of food distribution costs ever undertaken.

THE GERMAN HONEY MARKET

The honey market is returning to what it was before the war. Imported honey is in direct competition with the native, and when, by this competition, honey prices are cut, then the German beekeeper must retain his product. In other words, this misfortune has come upon us.

How was it before the war? In Hamburg foreign honey could be bought for 5 cents per pound, while native honey brought 25 cents, or five times as much. The honey-consuming public knew the difference between German and imported honey and bought the former from the beekeeper at 25 cents a pound, since he could only get the darker imported honey from the storekeeper in glass at 15 to 20 cents a pound, and it did not suit him.

How is it today? The public got used to substitutes during the war, glucose, adulterants, etc. Now again, in place of the substitutes comes the foreign honey, especially from America, where the crops yield immense profits compared to ours. But how does it taste compared to our native product? One need have no sweet tooth to find that the imported honey lacks the property which makes honey real honey, the fine, pleasant aroma. There is lacking, as is said of wine, the "smack."

Foreign honeys are many times low grade, which can in very few ways be mixed and blended to advantage. Also adulterants are not lacking. Anyone with a knowledge of honey, therefore, will not buy the foreign product. If the native honey costs 2 cents a pound more, it is worth it. Before the war, native honey sold for five times as much as imported. Now it brings only one-third more and, unfortunately, our beekeepers cannot sell our honey as cheaply since a beekeeper's needs (sugar, beeswax, hives and supplies) are raised out of all proportion.

Whoever desires honey, therefore, should buy no worthless, flat honey from abroad, but the uncontaminated, age-tested home product.—Der Bienenpflege for August.

BEARS ATTACK APIARIES

G. M. Newton Gets 300-Pound Bruin With His Rifle—A Loss of 20 Colonies at Beausejour.

It is a well-known fact that bears will often attack wild bees in the woods, being very fond of honey, but it is not often that a beekeeper has to reckon with bears as a problem in practical bee culture under civilized conditions. Yet some of the yards in Manitoba have been attacked by bears this year.

On September 4, Mr. G. M. Newton, the President of the Manitoba Beekeepers' Association, went to one of his outyards at the mouth of the Red River, near Selkirk, and brought home a 300-pound bear which he shot with a rifle. Residents of the neighborhood have seen a number of bears hanging around the yard, but there was no actual attack on the bees. Reports place the number of bears at eight.

At Beausejour a Polish beekeeper is said to have lost 20 hives through their being carried off by bears and broken open in the woods.—Western Gardener and Poultryman, September, 1921.

Winnipeg.

A Safe Introducing Cage

Take a piece of wire screen six inches square, cut the corners so you can turn all four sides down half an inch. Shake the bees from a comb of emerging brood and release queen and attendant bees on this comb. Place your wire cage over the queen and push the edges well into the comb. The frame, with cage attached, can now be replaced in the queenless colony and left for three days. After three days open the hive and with a lead pencil punch a hole through the comb near the center of the cage. This will provide a way of escape for the queen. After punching the hole the frame should again be replaced in the hive and the hive closed for five days more, when the cage can be removed.

This plan has worked for me for ten years. Try it with one queen or a thousand. George R. Shafer.

Arizona.

A NEW ADVERTISING STUNT

When it comes to starting something, leave it to the Vigo County, Indiana Beekeepers Association. It looks like President W. A. Hunter must lay awake nights thinking what to do next.

The latest from Terre Haute is "honey week." To start the thing off right the Mayor issued a proclamation setting aside the days from September 12 to 18 as honey week and urged everybody to buy Vigo County honey. C. O. Yost, one of the apiary inspectors, came to town to give live bee demonstrations for the entertainment of the public and to assist the members in demonstrating better methods to the beekeepers. In the forenoon of each day a trip was made by all interested in practical beekeeping problems to some apiary within driving distance of the city. During these forenoon sessions the local beekeepers discussed every problem of production and disease control.

In the afternoons a big wire cage was put up on a prominent corner in the heart of the business district. In the cage Yost gave a live bee demonstration that startled the folks who knew nothing of bees and attracted a big crowd to learn something about honey. State Entomologist Wallace came down for two days to assist with the enterprise and to give variety to the entertainment.

With the crowd gathered by the unusual entertainment, the next step was a honey market open for two hours every afternoon. People were told all about honey and many carried home a liberal supply. Large quantities were sold and many beekeepeers established contact with new customers who will continue to buy for a long time to come.

The Vigo County fellows began a few years ago to educate the box-hive beekeepers in the community in an effort to clean up disease. They made good beekeepers of a few and educated a lot more clear out of the business. Now they are starting in to educate the public to use honey. Judging from the large amount of publicity in the Terre Haute papers, they are doing a good job at both.

Ontario Convention

The Ontario Beekeepers' Association are holding their annual Convention on Tuesday, Wednesday and Thursday, November 22, 23 and 24, in Toronto. The Convention will be held at the same time as the Royal Winter Fair. An excellent program is in the course of construction, and the Hon. Manning Doherty will address the beekeepers on "Marketing." Other prominent speakers are expected to be present. Full particulars may be obtained from the Secretary, F. Eric Millen, Apiculture Department, O. A. C., Guelph, Ont.

Winter Conventions

Prof. H. F. Wilson, who as Chairman of the Schedule Committee for the National Honey Producers' League, is endeavoring to arrange the conventions in the form of a series of circuits, announces the dates of group five as follows: Michigan, December 1 and 2, at Lansing; Chicago-Northwestern at Hotel LaSalle, Chicago, Dec. 5-6; Wisconsin at Madison, Dec. 8-9; Minnesota, probably at St. Paul, Dec. 13-14, and Iowa at either Waterloo or Davenport, Dec. 15-16.

Western New Yorkers to Meet

The Western New York Honey Producers' Association will hold its annual fall meeting at the Genesee Hotel, Buffalo, N. Y., on Tuesday, November 15. A good program has been arranged and all beekeepers are invited to attend.

J. Roy Lincoln, Secretary.

Illinois Convention

Announcement has just been received that the Illinois convention will be held at Springfield on December 7 and 8, which will place them in group 5 of the National schedule. The Illinois meeting will come between the Chicago-Northwestern and the Wisconsin meetings.

Another Remedy for Beestings

I have a remedy that has saved myself and my children a lot of pain. As soon as I get stung, I dip a toothpick in carbolic acid and just touch the place stung. It does not smart if you don't put too much of it on. Of course it is dangerous to have the acid where children could get at it. It should be kept in a place out of their reach. P. P. Bandura, Creston, Ia.

Ontario Dark Crop Report

The dark honey crop report for Ontario appeared on October 1. The total dark honey reported was 395,445 pounds from 16,817 colonies, or an average per colony of 24 pounds.

The recommendations of the committee are as follows:

Dark amber or buckwheat extracted, wholesale, 9 to 11 cents; retail 12½ to 15 cents.

Bees Rooting

Page 411, October number, "Why bees root."

They are not rooting, they are varnishing. They do this on the underside of cover and all over the inside of the hive. If you will examine the inside of a hive, you will see that it never looks old, as it is varnished. This is their style of housekeeping inside, and they do the same on the outside when they have nothing else to do. Georgia.

Montana Producers Organize

A tentative selling organization of beekeepers was formed at Billings, Mont., recently, called the Montana Honey Producers' Association. Officers elected were, B. J. Kleinhesselink, President; B. F. Smith, Jr., Vice President; R. A. Bray, Secretary-Treasurer; L. W. Thorpe, Manager; W. A. Petzoldt, Director.

The amount of honey held by the members amounts to 529,000 pounds. If present plans show indications of success the organization will be made permanent.

A New Bee Magazine

The "Revista de Apicultura" is starting in Buenos Aires, with the September number. It is a 32-page magazine which is beginning with the progressive ideas. They mention Dr, Miller, Gleanings, the American Bee Journal, and publish articles from Morley Pettit, Jay Smith, besides their own writers. Juan Hoffman is the editor. We wish the new publication success.

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less that 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

BEES AND QUEENS

ATWATER HONEY—Supply your customers.

FOR SALE—1,400 stands of bees and equipment; 10 locations extending from El Paso, Texas, 25 miles north in New Mexico. If interested ask for further information.
Mesilla Valley Honey Co., Canutillo, Texas.

SEE our advertisements elsewhere.
Rosedale Apiaries,
J. B. Marshall, H. P. Le Blanc, Props.

FOR SALE—100 colonies of bees. Write for prices James Johnson, Pocahontas, Ark.

BEES by the pound for spring delivery in 1, 2 or 3-pound packages; also superior Italian and Carniolan queens from selected domestic and imported stock. Early order discount on orders booked now. Circular free.
J. E. Wing, 155 Schiele Ave., San Jose, Calif.

SPECIAL FOR MAY DELIVERY—One, two and three-pound packages; one, two and three-frame nuclei; three-band queens. Write for our dollar proposition. Safe arrival and satisfaction guaranteed.
Tupelo Honey Co., Columbia, Ala.

FOR SALE—Our famous Italian bees in packages, 2 and 3-lb. packages with queens for sale; they are as good for honey-gathering as any bees in the U. S. A.; they are as yellow and as gentle. Our bees have stood the test all through the U. S. A. and Canada; recommended far and wide. We are free from all brood disease. Our famous Root-Howe-Davis bees that have been bred and selected from a large number of yards, will please you. Try them. We give prices on request. Some of our Wisconsin customers have written that the packages received from us in May, 1921, gave 150 pounds of honey this year. Reference, Bank of Liberty, Liberty, N. C.
H. B. Murray, Liberty, N. C.

NUCLEI and Cypress hives for 1922 delivery—Three-frame black or hybrid bees, Italian queen, $5.00; 3-frame Italian bees and queen, $5.50; 3-frame black bees and queen, $4.00; 3 pounds black bees and Italian queen on comb of honey, $5.50. Cypress hives complete; 5 10-frame, $12. Full depth supers complete, five 10-frame, $7. Prices on other sizes upon request. I own the timber and manufacture the hives, with no middlemen involved. Book orders now, so you can name shipping date to suit yourself. One-third with order to guarantee acceptance. Reference: Toombs County Bank, Lyons, Ga. Good farm for sale cheap.; 660 acres. Terms to suit purchaser. Otto Diestel, Elza, Ga.

FOR SALE—100 colonies Italian bees.
E. M. Baldwin, Union Gap, Wash.

FOR SALE—Black bees—Three pounds, $5.00, parcel post prepaid. Add price of queen wanted. Pure black queens, 60c each; hybrid 40c; tested Italian, $1.25. Safe delivery guaranteed. One-fourth down. Write me.
Carl L. Wilson Apiaries, Mount Vernon, Ga.

BEES in 2-pound packages, our specialty for 1922. Now booking orders See ad elsewhere for prices. Caney Valley Apiaries
J. D. Yancey, Mgr., Bay City, Texas.

QUEENS OF QUALITY for 1922—3-banded Italians only. After April 15, untested, $1.25; tested, $2. Satisfaction guaranteed.
P. M. Williams, Ft. Deposit, Ala.

WE are now booking orders for spring delivery of our queens and package bees. Write us for prices. Graydon Bros.,
Rt. 4, Greenville, Ala.

1922 PACKAGE BEES and QUEENS—Untested and day-old, in Thompson safety introducing cages. Discounts on early advance orders. James McKee, Riverside, Cal.

QUEENS, package bees and nuclei. Begin shipping March 15, 1922. Circulars free. Booking orders now.
Dr. White Bee Co., Sandia, Texas.

FOR SALE—300 colonies bees in 8-frame hives; also a lot of supers, combs, and bee shipping cages. Locations go with bees if wanted. Priced right.
C. H. Cobb, Belleville, Ark.

SELECT QUEENS—Choice three-band Italians, tested, $2.50; untested, $1.25. Also a few Carniolans, same price.
Geo. W. Coltrin & Son, Mathis, Texas.

FOR SPRING DELIVERY, 1922—One vigorous Italian queen, one frame emerging brood, one pound bees. Price, complete, f. o. b. Bordelonville, $5. Additional frames of brood, each $1; additional pounds of bees, each $1. Queen introduced and laying enroute to you. Safe delivery and satisfaction guaranteed. No disease. Reference given. Orders booked one-fifth down, May delivery. Send for addresses of satisfied customers.
Jes Dalton, Bordelonville, La.

BEES—100 colonies for sale.
E. F. Atwater, Meridian, Idaho.

FOR SALE—400 stands clean bees, extracting equipment; good location; for reason write. The Oregon Apiary Co.,
Nyssa, Oregon.

WE BELIEVE we have the best Italian queens obtainable. Our new system is working wonders. Untested, $1.25; tested, $2.25; virgins, 50c. Am booking orders for 1922.
F. M. Russell, Roxbury, Ohio.

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

BEES AND QUEENS from my Carolina apiaries, progeny of my famous Porto Rican pedigreed breeding stock.
Elton Warner, Asheville, N. C.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices. A. W. Yates,
15 Chapman St., Hartford, Conn.

FOR SALE—Root's strain of golden and leather-colored Italian queens; bees by the pound and nuclei. Untested queens, $1.50 each; select untested, $2 each; tested, $2.50 each; select tested, $3 each. For larger lots write. Circular free. A. J. Pinard,
440 N. 6th St., San Jose, Calif.

WE are booking orders for our golden Italian queens for spring delivery after April 15. Untested queens, 1, $1.50; doz., $15; select untested queens, 1, $1.75; doz., $18; virgin queens, 1, 75c; doz., $9; tested queens, 1, $3; doz., $36. Safe arrival guaranteed.
Tillery Brothers, Georgiana, Ala.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

FOR SALE—Burleson's three-banded Italian queens. The kind of bees that get the goods. Guaranteed to please or money back. For balance of season as follows: 1 select untested queen, $1.25, 6 for $7, 12 for $13.50, 100 or more $1 each. Send all orders, together with remittance, to J. W. Seay, manager, Mathis, Texas.
T. W. Burleson, Waxahachie, Texas.

WANTED—We have many calls from educators for copies to complete their files of the older Bee Journals. If you have complete volumes or miscellaneous numbers of any Bee Journals previous to 1900, write us, giving a list, and we will be glad to quote a price. Old bee books, now out of print, are also desirable. We act as a clearing house for this kind of materials.
American Bee Journal, Hamilton, Ill.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

WE are now equipped to handle your early spring orders for package bees and queens, especially bred for the production of honey. Our queens are bred from the best stock obtainable, and will give satisfaction. Safe arrival guaranteed. Write for prices and terms.
Sarasota Bee Co., Sarasota, Fla.

NUCLEI—We make a specialty of shipping 2-frame nuclei. Write for special prices for June delivery. Queens at the following prices: Untested, $1.50 each; 6, $8; 12, $15; 50, $60; 100, $100. Tested queens, $2.50 each.
Cotton Belt Apiaries, Roxton, Texas.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and goldens, pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1, untested queens $1.50 each, 6 for $8, 12 or more $1.40 each, 25 or more $1.25 each. Tested queens $3 each, 6 for $16.
Buckeye Bee Co., Justus, O.

SWEET CLOVER SEED

HUBAM—The annual white sweet clover. Produced under garden cultivation. Guaranteed genuine Hubam seed. Cleaned, hulled and scarified, $2 per pound, prepaid.
Blair Bros., Rt. 4, Ames, Iowa.

HONEY AND BEESWAX

ATWATER HONEY—Supply your customers.

FOR SALE—White and amber extracted honey; also comb honey. Write for prices. State quantity wanted.
Dadant & Sons, Hamilton, Illinois.

EXTRA FINE white sweet clover honey, in five-gallon cans, case of two cans, $15; one can, $8, or seven cases for $100. Sample 10c.
C. S. Engle, 1327 E. 23rd St., Sioux City, Ia.

FOR SALE—About 300 hives of Italian bees in 8 and 10-frame hives together with full equipment, all located 6 miles south of Nampa, Idaho, in good district. No disease.
Elton S. Stinson,
New Brunswick, N. J., care Woodlawn.

FOR SALE—Extracted honey, mostly amber.
Edward Hogan, Canandaigna, N. Y.,
Care Bringham Hall.

FOR SALE—100 colonies of bees.
William Judd, New London, Iowa.

FOR SALE—1,200 pounds of choice Rocky Mountain honey in new cans, 60 lbs. net, 2 in case, 9c per pound f. o. b. Hooper. Sample 10c. H. F. Smith, Hooper, Colo.

HONEY FOR SALE—In 60-lb. tins, water white orange, 14c; water white clover or white sage, 12c; extra light amber sage, 11c; New York State buckwheat, 10c, for immediate shipment from New York.
Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE—New crop choice clover extracted honey, packed in *new* cans and cases, at $14.85 per case of two 60-lb. cans. A few cases of last year's clover honey at 10c. Write for price on ten or more cases of new honey.
J. D. Beals, Oto, Iowa.

MR. BOTTLER, supply your trade with the best, several tons finest extracted honey ready to ship at your command.
Bee-dell Apiaries, Earlville, N. Y.

FOR SALE—Extra fine white clover honey, in new 60-lb. cans, two to the case, at $15, f. o. b. Ruthven, Iowa.
Martin Carsmoe.

FOR SALE—Amber honey in 60-lb. cans.
P. W. Sowinski, Bellaire, Mich.

FOR SALE—Finest clover honey, packed in new 60-lb. cans and 5-lb. pails. Sample 15c.
A. C. Ames, Weston, Ohio.

HONEY—SUPPLY YOUR CUSTOMERS—Finest alfalfa-clover honey, extra strong cases, case of two 5-gal. cans, $12; case of six 10-lb. pails, $7.20; case of twelve 5-lb. pails, $7.80, all f. o. b. here.
E. F. Atwater, Meridian, Idaho.

FOR SALE—No. 1 white comb, $6 per case; No. 2 white comb, $5 per case of 24 sections; six cases to carrier. Clover extracted, in two 60-lb. cans to case, 15c per pound; 5-lb. pails, $1 each, 12 to case. Amber baking honey, two sixty-lb. cans to case, 10c per pound; same honey in 50-gallon barrels, 8c.
H. G. Quirin, Bellevue, Ohio.

FOR SALE—New crop sweet clover honey in 5-lb. pails, 12 to case, 15c per lb.; 60-lb. cans, two to case, 12½c per lb.
J. P. Goodwin, South Sioux City, Neb

FOR SALE—Extra choice extracted white clover honey, put up in 60-lb. cans and 5-lb. lithographed pails. Sample 20c, same to apply on first order.
E. J. Stahlman, Grover Hill, Ohio.

FOR SALE—Extra fine Michigan white clover and basswood honey. Almost water white; indeed, I doubt if the color, body and flavor can be beaten. Put up in 60-lb. cans, 2 to the case, at 15c per pound, or in 5-pound pails, 50 to the barrel, at 17c per pound. Sample 15c.
O. H. Schmidt, Rt. 5, Bay City, Mich.

FOR SALE—Finest Michigan raspberry, basswood and clover No. 2 white comb, $5.50 per case; No. 1, $6; fancy, $6.50; extra fancy, $7, 24 Danz. sections to case. Extracted, 60-lb. cans 15c per lb. W. A. Latshaw, Clarion, Mich.

FOR SALE—Extracted honey. Write for prices. A. L. Kildow, Putnam, Ill.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

HONEY WANTED—Give particulars in first letter. Elton Warner, Asheville. N. C.

SUPPLIES

ATWATER HONEY—Supply your customers.

FOR SALE—Four-frame Handy reversible extractor, $26.
Lorenzo Clarke, Winona, Minn.

FOR SALE—Empty honey cans in cases, all in A No. 1 shape. Emil Strudel,
1461 Richard St., Milwaukee, Wis.

FOR SALE—25 standard dovetailed hive-bodies, new and free from disease, $1.25 each. Thos. Cordner, Rt. 7, Sparta, Wis.

CLOSING BARGAINS—8 frames shallow extracting supers, 65c; shallow frames, 2½c; Hoffman frames, 6c; 10-frame section supers, 80c; plain section holders, 2½c; Parker foundation fastener, 20c; Alexander feeders, 20c; division-board feeders, 25c; bee escape board, 15c; single exit bee escape, 12½c; super springs, 70c per 100; tin rabbets, 8 frames, 1c each. H. S. Duby, St. Anne, Ill.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado Honey Producers' Association,
Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

MISCELLANEOUS GOODS

We list below numerous goods, very slightly shopworn, or odd stock, at prices which will save you money:

1 copy Productive Beekeeping, well bound, good as new $1.90
13 wiring boards for Langstroth brood frames, Hoffman size, ... $1.00 each
1 Big Smoke smoker, 1 slight dent $1.45
1 transformer for 60-cycle 110-volt current, ... $2.50
9 10-frame Tri-State honey boards..... 25c each
145 fiber mats for 10-frame hives ..... 30c each
2 8-frame moving screens for entrances of hives ..... 25c each
5 10-frame moving screens for entrance hives ..... 25c each

HIVES AND PARTS

4 crates of 5 1-story 8-frame tri-state hives with frames ..... $14.28 per crate
1 crate of 5 1-story 10-frame tri-state hives, with frames ..... $15.70 per crate
5 crates of 5 No. 1 8-frame tri-state supers. ..... $4.15 per crate
10 crates of 5 No. 1 10-frame tri-state supers ..... $4.55 per crate
3 crates of 5 8-frame tri-state supers, with 5⅜ frames ..... $4.10 per crate
5 crates of 5 10-frame tri-state supers, with 5⅜ frames ..... $4.55 per crate
3 crates of 5 No. 2 10-frame dovetailed supers ..... $5.65 per crate
3 crates of 5 10-frame dovetailed supers, with 5⅜ frames ..... $4.55 per crate

23 crates of 5 8-frame 1-story dovetailed hives, with frames ..... $11.90 per crate
1 crate of 5 10-frame dovetailed supers, 16¼ wide, for 4¼x4¾x1⅛ sections, $4.60 per crate
1 crate of 5 No. 3 10-frame dovetailed supers $5.65 per crate

FRAMES

4 crates of 100 Modified Dadant extracting frames, 6¼ deep ..... $5.40 per crate
2 crates 100 Modified Dadant brood frames $6.85 per crate

BOTTOMS AND COVERS

1 crate of 5 10-frame dovetailed bottoms, $3.30 per crate
29 crates of 5 8-frame Excelsior covers $3.12 per crate
17 crates of 5 8-frame ventilated gable covers, $3.20 per crate
1 crate of 5 8-frame dovetailed flat wood covers with inners ..... $3.20 per crate
8 crates of 5 8-frame Colo. covers, with inners ..... $6.00 per crate
11 crates of 5 10-frame Colo. covers, with inners ..... $7.00 per crate
5 crates of 5 10-frame double wood covers with inners ..... $3.30 per crate
6 crates of 5 10-frame ventilated gable covers $3.30 per crate

SECTIONS

2 crates of 500 5¼x5⅞x2 open 4 sides sections $6.00 per crate
30 crates of 500 4¼x1¾ 2 side sections, $5.50 per crate
8 crates of 500 4¼x1 15-16 2 side sections $5.50 per crate
6 crates of 500 4¼x2 2 side sections $5.50 per crate
7 crates of 500 4x5x1⅝ plain sections $5.00 per crate
3 crates of 500 4x5x1⅜ plain sections, split $5.00 per crate
400 5¼x6¼x1⅞ sections, 2 side, all for $3.50 for lot

SHIPPING CASES

2 crates of 10 shipping cases for 12 4¼x1⅞ sections ..... $3.00 per crate
5 crates of 50 single tier shipping cases for 24 4¼x2 sections ..... $25 per crate
4 crates of 25 safety cases for 24 4¼x1½ sections ..... $12.25 per crate
10 crates of 25 shipping cases, safety, for 24 4¼x1⅞ sections ..... $11.75 pe crate
1 crate of 10 safety cases for 12 4¼x1⅞ sections ..... $3.00 per crate
1 crate of 25 single tier cases for 24 4¼x1⅞ sections ..... $11.75 per crate
1 crate of 10 2-tier cases for 24 4¼x1½ sections ..... $5.30 per crate
4 crates of 25 cases for 12 4x5x1⅜ sections $7.00 per crate
2 crates of 10 cases for 12 4¼x1½ sections $3.00 per crate

EXTRACTORS, HONEY AND WAX

3 No. 10 extractors, never used, fine condition ..... $30.00 each
1 No. 15 extractor, never used, fine condition $32.00
1 Emerson 4-frame reversible, fine condition $60.00
1 Rauchfuss solar wax extractor, fine condition $8.00

HONEY PACKAGES AND SIGNS

65 cases of 2 60-lb cans, new cans, used cases $1.15 per case
16 cases 24 6-oz. glasses ..... 75c per case
3 cases 24 12-oz. jars ..... $1.25 per case
1 case 24 24-oz. jars $1.75
500 1-lb friction-top cans, with lids; no bails 2c per can
1 honey sign, 25x25 in., slight bend $2.00

Send us your order by return mail.

DADANT & SONS,
Hamilton, Illinois.

FOR SALE

ATWATER HONEY—Supply your customers.

FOR SALE—1900 to 1914 back numbers of Gleanings; best offer takes them. S. C. W. L. cockerels at $1.25 each.
A. H. Hattendorf, Ocheyedan, Iowa.

FOR SALE—Good second-hand 60-lb cans, two cans to a case, boxed, at 60c per case f. o. b. Cincinnati. Terms cash.
C. H. W. Weber & Co., 2163 Central Ave, Cincinnati, Ohio.

FOR SALE, apiary—Five hundred cash, seventeen strong colonies Italian bees in Root hives, Cowan extractor, 9 gross fancy bottles, 1,000 fancy labels, 100 corrugated shipping cases; established trade. Bee pasturage all year. Cheap rent. Suburb of New Orleans, La., on car line. Opportunity for woman or elderly man.
Katz, 816 Perdido St., New Orleans, La.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

FOR—SALE—Hamburg chickens; rare old violin.
Elias Fox, Union Center, Wis.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

WANTED

ATWATER HONEY—Supply your customers.

WANTED—Comb honey. Description and price first letter; also extracted honey; bees.
Frank Coyle, Penfield, Ill.

WANTED—High grade extracted honey, white clover preferred.
Merton Church, Highland Park, Ill.

WANTED—Our own fall crop having been a partial failure, we could use limited quantities of heartsease and Spanish needle honey. Send sample when offering and give price you expect and how put up in first letter.
Dadant & Sons, Hamilton, Illinois.

WANTED—Honey, section, bulk comb and extracted.
W. A. Hunter, Terre Haute, Ind.

WE BUY honey and beeswax. Give us your best price, delivered in New York. On comb honey, state quantity, quality, size and weight of sections and number of sections to a case. Extracted honey, quantity, quality, how packed, and send samples.
Charles Israel Bros. Co.,
486-490 Canal St., New York City.

WANTED—Beeswax, also old combs and cappings to render on shares; will buy your share and pay the highest market price.
F. J. Rettig, Wabash, Ind.

WANTED—Beeswax, old combs and cappings for rendering on shares. Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—Extracted honey. Send prices and samples. Will exchange Haywood vulcanizing outfit for honey, worth $450, with tools and equipment. Chris Bahr, Cathay, N. Dak.

MISCELLANEOUS

ATWATER HONEY—Supply your customers.

LEAGUE EMBLEMS—We still have a number of U. S. Beekeepers' emblems, buttons or pins, bronze or gold. Send 50 cents and get one
American Bee Journal, Hamilton, Ill.

BEE JOURNAL COMBINATIONS

Knowing that our readers are interested in all beekeeping literature, we are glad to offer the different bee journals in combination with our own at a reduction that will be a saving

	Regular Price	With A.B.J. 1 year
Western Honey Bee	$1.00	$2.25
Beekeepers' Item	1.00	2.25
Dixie Beekeeper	1.00	2.25
Beekeepers' Review	1.00	2.25
Gleanings in Bee Culture	1.00	2.50

Canadian postage, 15 cents per year; foreign, 25 cents.

Prices quoted on all foreign bee publications on application.

AMERICAN BEE JOURNAL
Hamilton, Illinois

SITUATIONS

ATWATER HONEY—Supply your customers.

WANTED — Salesman to sell "Desert Gold" honey. All winter position to right man. Give references and particulars first letter.
Custer Battlefield Apiaries, Hardin, Mont.

WANTED—Position—Young man, 20, wants position with commercial beekeeper for season of 1922; 3 years' experience in beekeeping on small scale. References furnished.
Jos. C. Allen, Alpine, Ala.

Statement of the Ownership, Management, Circulation, Etc., required by the act of Congress of August 24, 1912, of **American Bee Journal,** published monthly at Hamilton Illinois, for October, 1921:

STATE OF ILLINOIS, } ss.
COUNTY OF HANCOCK. }

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared M. G. Dadant, who having been duly sworn according to law, deposes and says that he is the Business Manager of the American Bee Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher, American Bee Journal, Hamilton, Ill.

Editor, C. P. Dadant, Hamilton, Ill.

Managing Editor, Frank C. Pellett, Hamilton, Ill.

Business Manager, M. G. Dadant, Hamilton, Ill.

2. That the owners are:

C. P. Dadant, Hamilton, Ill.
H. C. Dadant, Hamilton, Ill.
V. M. Dadant, Hamilton, Ill
Leon Saugier, Hamilton, Ill.
L. C. Dadant, Hamilton, Ill
M. G. Dadant, Hamilton, Ill.
Jos. Saugier, Hamilton, Ill.

That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of the total amount of bonds, mortgages or other securities, are: None.

(Signed) M. G. DADANT.

Sworn to and subscribed before me this 21st day of October, 1921.

MARY McCOY, Notary Public.

My commission expires January 17, 1924.

Crop and Market Report

Compiled by M. G. Dadant

NOVEMBER REPORT

For our November report we asked the following questions of our reporters:

1. What is your total crop and how does it compare to last year?
2. What have you been selling your honey for, wholesale and jobbing?
3. Is the honey demand looking up any?
4. How much of your crop is sold?

THE TOTAL CROP

We can do no better than give the average of figures as given by reporters on the total crop. Maine reports 70 per cent of a normal crop, Vermont 50 per cent, Rhode Island and Connecticut 50 per cent, Massachusetts 50 per cent, New York 70 per cent, Pennsylvania 150 per cent, Maryland, New Jersey and the Carolinas 10 per cent, Georgia 75 per cent, Florida 50 per cent, Kentucky and Tennessee 30 per cent, Mississippi and Alabama 50 per cent, Louisiana 125 per cent, Texas 110 per cent, Ohio 110 per cent, Indiana 100 per cent, Michigan 125 per cent, Wisconsin 75 per cent, Minnesota 80 per cent, Illinois 80 per cent, Iowa 10 to 50 per cent, depending whether on eastern or western side of the State; Missouri 50 per cent, Kansas and Nebraska and South Dakota 50 per cent, Arizona and New Mexico 30 per cent, Colorado 100 per cent, Montana 125 per cent, Idaho 75 per cent Utah 50 per cent, Nevada 80 per cent, Oregon and Washington 50 per cent, California 5 to 50 per cent.

All in all, indications are that there will not be much over 75 per cent as much honey as last season, even though we take into consideration the larger number of bees this year.

One big factor also is that some of the largest honey-producing areas have had a short crop, so that the total amount of honey entering into shipment to the larger markets will probably show a smaller percentage than mentioned above.

PRICES OF HONEY

Two months ago the market was greatly depressed. There was a large amount of foreign honey being offered and this was having its effect on the whole honey situation. Since that time, there has been a decided change. Cuban honey is beginning to seek the European markets to such an extent that we see in the German bee papers agitation against the cheap "American" honeys which are damaging the sale of their home product.

We know of one or two cars of white honey being sold at a price ranging from 7 to 8¼ cents f. o. b. shipping point, with considerable amber honey from the west being offered as low as 6 cents f. o. b. shipping point. Comb honey is in excellent demand. Some has sold as low as $4.15 to $4.75 per case, f. o. b. shipping point for No. 1. These sales seem to have been made by the "scared" beekeeper, however, as there was no indication of such a low price being necessary to move the honey. Mostly comb is selling from $5.25 to $5.75 f. o. b. shipping point for No. 1.

Most of the prices turned in by producers would indicate that they expect to get the equal of 8½ to 9 cents f. o. b. the western shipping point, which means a basis of about 10½ to 11 cents for the easterner. These prices we believe are not out of the way, and should represent the minimum price in large lots, for white honey. Amber is still meeting the competition of the earlier cheap honey and will feel it probably for a little time yet.

THE DEMAND

It is remarkable how replies accord as to the demand for honey. Whereas two months ago, all reporters were discouraged with the very slack demand and lack of interest on the part of the buying public, now comes the assurance that the demand is improving fast. Many report that the demand never was so good at this season of the year. This is the case in our own locality, where honey is being sold, evidently to replace the almost complete lack of any kind of fruit.

Demand seems to be slower to pick up in the larger centers, due more likely to the slowness of the jobbers to buy than to the reticence on the part of the public. We look for increased activity here as the fall develops. Comb-honey demand is good. There should be no trouble in disposing of this year's production at good prices.

PART OF CROP SOLD

As in the previous inquiry, nearly all reporters are in accord to the effect that at least one-half the honey has been sold, this being especially true in the States of small production, where the sales are made locally and do not go through the larger distributing centers. In view of the fact that some of the later honey is no more than ready for the market now, this is a good indication. Texas, which seemed to be overstocked a little earlier in the season, is getting rid of her surplus fast and should be able to handle the bulk of her crop without trouble.

In amber honeys, it seems that the cheapest offered now are the Southern honeys, which are still very low, considering the otherwise stable condition of the market.

SUMMARY

All in all, the honey situation appears extremely favorable.

Old stocks are now practically cleaned up and the new offerings are in good demand. The drop made earlier in honey seems to have been sufficient to create for it a demand on the part of the public. In our own locality sorghum is selling at $1.50 per 10-lb. can, while honey brings $2.25. Easy to see which will be selected by the party who has a taste for honey.

We would urge several things on the honey producer at this point. Supply your trade as long as it is possible to do so, even though it means buying honey from outside, and even though your profits on the handling are very moderate.

Get a fair price for your product, a price which will be in line with the price quoted by the larger packer, so that he may step into your market and keep it supplied continually should you run out.

Do not take advantage of the strong demand to raise prices to the point where the demand will cease, for this will mean a curtailing of consumption of honey, not only now, but for years to come. It looks as though the honey-eating public of war time was going to continue its use if given a chance by the producer and handler.

Why Buy Now?

There are two good reasons for buying your bee supplies now:—

1. **By so doing you will save money.**
2. **By buying now you can be putting your supplies together and getting them all ready this winter, so as to be prepared when they are needed in the spring.**

WHY YOU WILL SAVE MONEY BY BUYING NOW

Our recent sharp cuts in prices of supplies were much greater than today's costs justify. Some materials are actually advancing again. It is our honest belief that prices will not go any lower. But the biggest reason why you will save money by ordering now is on account of our **early order discount.**

5% for November
4% for December

This **early-order cash discount** is bound to save you money. We give this discount now in order to stimulate trade during an otherwise dull period, thereby keeping our plant going to capacity to decrease burdens and overhead, and enabling us to sell our goods to you for less money. **Help us to help you. It will pay you to order now and take these discounts.**

Business confidence is returning. Trade will be brisk next spring. Don't get caught in the rush. The late ones always get caught and have to wait. Delay during the honeyflow is needless waste and expense.

There is a Root Dealer near you

For your convenience and in order to save you on freight, the following distributing points are maintained:

New York	Savannah	Los Angeles	St. Paul
Philadelphia	New Orleans	San Francisco	Chicago
Norfolk	San Antonio	Council Bluffs	Indianapolis
	Syracuse		

THE A. I. ROOT COMPANY
MEDINA, OHIO

Fifty Years in the Bee Supply Business